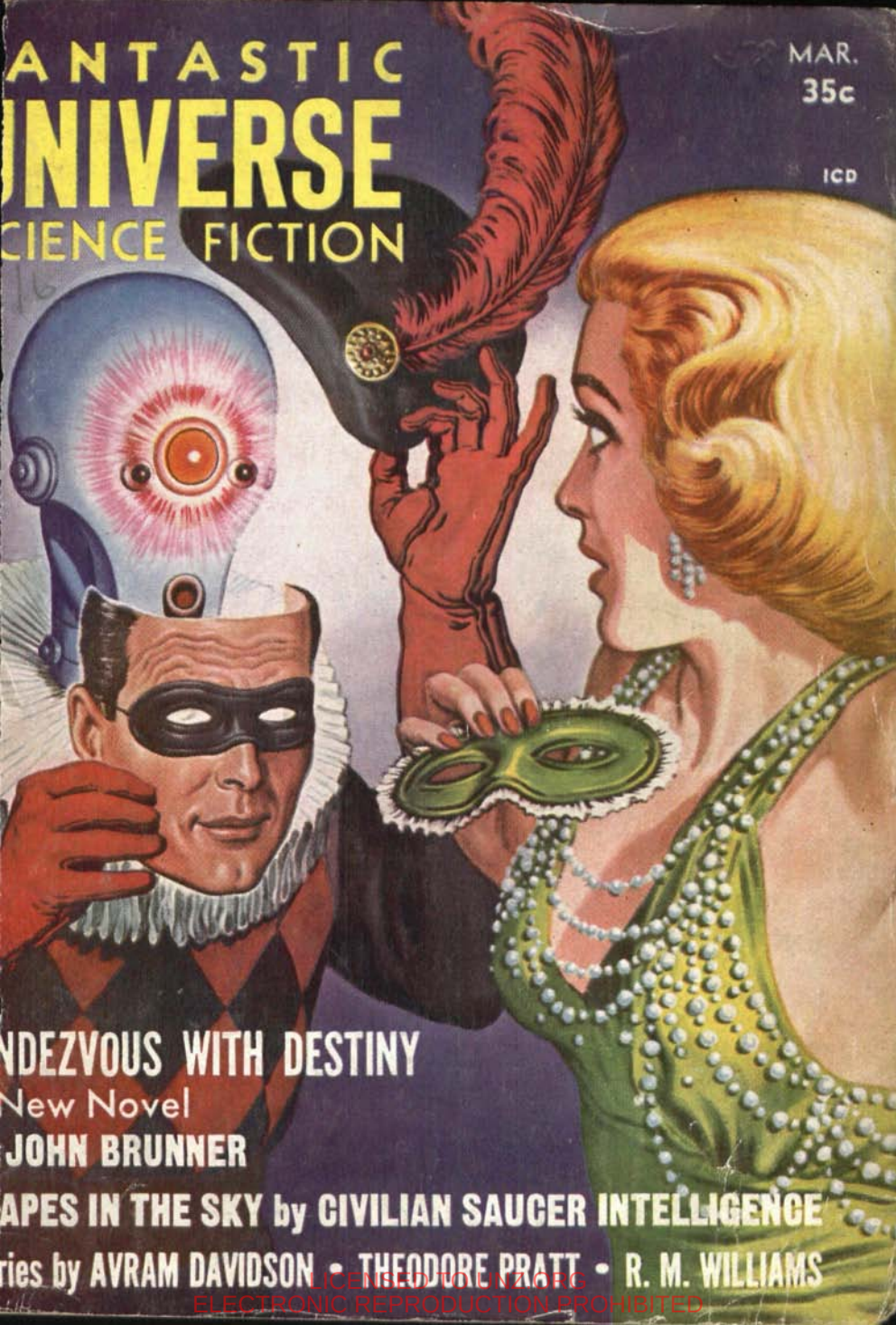

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BEHIND THE SPUTNIKS

NOW THAT THE SMOKE has settled a little and the Sputniks are admitted facts, we can perhaps more fully appreciate what both—including Laika's one-way trip into space—may mean for our generation.

Anticipating a first landing on the moon by 1965, one of the Russian scientists responsible for the Sputniks declares flatly, in a Swedish weekly, that by 1970 they will be on the moon.

Here in this country, Arthur C. Clarke declares that we will undoubtedly reach the moon within fifteen years.

Russian General Blagonravov writes that this first trip to the moon will be taken by an unmanned rocket, equipped with automatic and extremely sensitive instruments which will report their observations to a base on earth by short-wave and television. This initial exploratory rocket, according to another report, will land with its "robot laboratory" on the plain known as Ptolemy Circus. Hatches will open, and a "robot vehicle," containing recording instruments, will leave the craft and make a preliminary survey of the area, gathering data needed in planning for the anticipated permanent "scientific station" on the moon. Blagonravov refers to this when he anticipates the need for setting up, initially, a base on the moon where necessities and technical equipment may be stored preliminary to the establishing of a "larger community."

Mars is the next goal, a Mars which is assumed to have both water and oxygen and whose canals may actually be cultivated land. There is an interesting assumption that gardens may be laid out on Mars more easily than on the atmosphereless and waterless moon. To reach Mars it will be necessary to fuel enroute, and here it appears that the harnessing of solar energy is anticipated.

While these plans are impressive, there is no doubt that in the next years, and certainly in the next decade, we ourselves will outdistance the others in the race for the stars, but this will obviously require a dedication and an all-out effort at all levels.

Again History seems to have caught up with Science Fiction, and again this will be for the moment only! Those who work in this field will still justify Bertrand Russell's view of Science Fiction as the "intelligent anticipation" of Tomorrow!

Beginning with the next issue, Lester Del Rey, author of the recently published ROCKETS THROUGH SPACE (Winston, $3.95), NERVES (Ballantine), etc., will write a series of articles for *Fantastic Universe* on the first man-made satellites. His first article, BEHIND THE SPUTNIK, appears in our April issue.

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FANTASTIC UNIVERSE

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Cover Design

FANTASTIC UNIVERSE, Vol. 9, No. 3. Published monthly by KING-SIZE PUBLICATIONS, INC., 320 Fifth Ave., N. Y. 1, N. Y. Subscription, 12 issues $3.75, single copies 35¢. Foreign postage extra. Reentered as second-class matter at the post office, New York, N. Y. The characters in this magazine are entirely fictitious and have no relation to any persons living or dead. Copyright, 1958, by KING-SIZE PUBLICATIONS, INC. All rights reserved, March, 1958.
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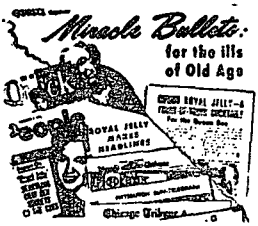
ROYAL JELLY, the Queen Bee's Special Food...ITS SECRET OF PROLONGED LIFE!



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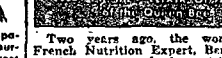

Two years ago, the world-famous French Nutrition Expert, Bernard Desouches wrote a book praising Royal Jelly as a Life Prolonger and Extraordinary Stimulator of Sexual Virility of the Queen Bee.

Royal Jelly Reported to Help Those Suffering From:

Mental Depression... Loss of Appetite... Sexual Weakness... Digestive Disturbances... Headaches... Decreased Vigor... Nervousness... Aches and Pains... Irritability.

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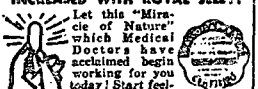
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More Are Semi of the Symptoms of Approaching Old Age which Make Men and Women over 40 feel devitalized and "played out" before their time!

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○ Royal Jelly alleviates suffering of men and women in their critical years in a sensational manner.

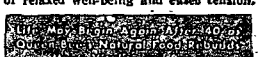
○ Royal Jelly acts on weakened, tired eyes, giving instantly a sensation of new light.

○ Feeling of tiredeness disappears immediately.

○ Royal Jelly gives a feeling of increased sexual drive and energy, especially to men and women over 40.

○ Royal Jelly permits prolonged intellectual work without tiring.

○ Royal Jelly produces a pleasing state of relaxed well-being and eases tension.



Royal Jelly is totally unlike honey, and has baffled scientists since the 1700's. In 1894, some of the mystery was dispelled when Leonard Bordas, a French scientist, discovered that Royal Jelly is secreted by special glands located in the heads of worker bees whose job is to nurse the Queen.

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rendezvous with destiny

by . . . John Brunner

The choice was theirs. The alternatives were to stay aloft — and starve — or to land, and perhaps survive.

ONCE upon a time there was a sea. It was full of life.

But the sea grew smaller and the life-forms more numerous. There was the problem of overcrowding. Perhaps, if any of the inhabitants had been capable of wonder, they would have turned their flat eyes upwards and asked themselves what it was like above the sky, beyond the shining barrier of the surface. There was plenty of room there.

Eventually, some of them found out the hard way what it was like. Stranded by the tide, they gasped their lives away along the shore; dying, they left their outline in the mud, which dried, and was compressed, and became rock.

And—a billion years later, and many more than a billion miles away—a man was studying the fossil shapes of some of those remote ancestors.

The reflection seemed suddenly to telescope time, and Franz Yerring gasped. He put out a shaking hand to turn off the projector which cast microfilm images on the wall before him.

For a long time after that he sat at the desk and listened to the sounds of the ship, identifying

John Brunner, one of the most interesting of the British SF writers, wrote some time ago that "word of mouth is something no natural catastrophe like fire or water can destroy." He quite possibly had this in mind when writing this remarkable novel of heroism and conflict.

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every one of those that seeped through the thick insulating walls of the office with an ease born of thirty-seven years of hearing them. He did not move except to breathe deep shuddering sighs, until the buzzer on the door sounded. Then he roused himself to say, "Come in."

Tessa Lubova, his senior aide, slid the panel aside and stepped through with her habitual lithe grace. She carried the daily productivity reports, which she put on the desk before him.

On the verge of going out again, she paused and stared at him curiously. "What's the matter?" she demanded. "You look as white as paper!"

"It's nothing," said Yerring, getting stiffly to his feet. His voice had an irritable edge on it which he tried to disguise—it was not good to be sharp with the tripborn.

Tessa shrugged with one shoulder, hesitated a moment, and left the room. *Nice girl,* thought Yerring absently. Nicer than most of the tripborn, anyway—most of them would never have noticed, and if they had, they wouldn't have given a damn.

But then, she was one of the eldest.

He tripped the switch of the multipanel on the wall. It could be a picture, or an observation screen, or a mirror, according to the whim of the user. He selected the mirror setting and examined himself critically.

Yes, no wonder Tessa had been startled.

He forced himself consciously to relax, and went back to the desk, glad of the work which she had just brought him. He had been trying to throw away time by studying the textfilm, and had been unable to lose himself in it. No one in the ship now could get away from the tension which hung in the air like smoke. It had not been publicly announced that Trip's End was near—if anyone did know the exact time, it would be Sivachandra and possibly one or two of his navigation aides—but there were rumors.

And how reliable is a rumor? he asked himself wryly. He knew as well as any of the earthborn aboard that the trip was estimated to take not less than thirty-six and not more than forty years, but he had been there when the estimate was made, and he knew how much of it depended on guesswork, as well.

He glanced through the summary on top of the sheaf of reports, and frowned. Taking up a red writestick, he entered the day's returns on the master ecological chart which occupied one full wall of the office. On it, population was plotted against productivity: two curves, opposing and balancing each other, averaged out from dozens of daily entries relating to air supply, vegetation, water reclamation. . . .

Sometimes he wondered how he kept track of it all.

His frown remained as he men-

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tally extended the current downward sweep of the productivity line. Either Trip's End was close—

"Or we," he said to the air, "are going to be on short rations in less than a month."

That would be the sterile mutation in Culture B, he knew; it had been weighing the whole output down for days now. All the staff he had available was busy tracking down the mutated plasm, but it would take some time to eliminate it, and if one found more after that one could never tell if it was descended from a previously altered strain, or if it was a new series altogether.

"Hear this!" said the voice of George Hattus, the ship administration officer, from the public address speaker under the multipanel. "There will be a Captain's Conference at fourteen."

Yerring took the information in automatically, his eyes still fixed on the down-trending curve. It was bad—it really was. The cultures not only served to provide food for the crew; they were a main element in the oxygen re-cycling system. Perhaps he had recommended too optimistic an increase in population on the strength of having got away without a major incidence of sterility. He should have allowed for an increase in mutation with the rising radiation level as they homed on the sun of their goal. . . .

Just as well Magda's called this conference, he thought.

The chronometer showed it lacked only eight minutes of fourteen hours. He gave a glance round the room by force of habit and went out, down the long green corridor towards the administration section.

Outside his main charge—the hydroponics section—he found a crew from maintenance taking up the plates to get at a gravity coil which had been on the blink, and called to the man directing operations.

"Captain's conference, Hatcher! Did you hear the announcement?"

Quentin Hatcher turned burning eyes on him. He seemed on the brink of saying something acid, but contented himself with a weary nod. He gestured to the workers round him, and they stood back to let Yerring pass, which he did with a word of thanks. He could almost feel those eyes on the back of his neck as he walked on.

I wonder when it first began, he thought. Of course, like the rest of the earthborn, he wouldn't have noticed it. Only the education staff, probably, had the chance. His life was shared with his friends, whom he had known for over forty years —since they came together to work on a ship which was no more than drawings on a board, stress equations in a computer, and a dream burning in their minds.

But the slow antagonism had arisen all about them, until now they faced it as a fact.

What made it that way? The tripborns' knowledge that it was with them that the future lay? That

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the earthborn in the ship were condemned to spend their lives in space, perhaps living long enough to see Earth again before they died —and perhaps not—while they, the tripborn, would go on to plant the first human colony under an alien sun?

Somehow, though that explanation was pleasing, he could not be satisfied with it.

Aside from the technicians checking the recording equipment, there was only one person ahead of him in the conference room, and that was Tsien, the senior psychologist. He sat in the chair on the right of the captain's place, bald head bent low over a stack of psychometric data sheets.

He glanced up as Yerring entered and nodded to him. On the point of looking down again, he checked himself. "What's with you, Franz?" he inquired. "You look as if you've seen a ghost."

Hadn't he got over it yet? Yerring restrained an impulse to reach up and feel for the betraying expression on his face. "In a way, I have," he said wryly, taking his place one chair away from Tsien. "Don't let me interrupt you."

"You aren't interrupting," said Tsien promptly. "I've read all these papers already, and going through them again won't alter the facts in them. What's the trouble?"

Yerring shrugged. "I was thinking about the size and duration of the universe. It was as if—well, as if I'd had a vision of the full extent of it. It was extremely disturbing."

"I can imagine it would be." Tsien settled back in his chair, big-shouldered, pot-bellied, reassuring of tone. "What did you find so particularly uncomfortable about it, though?"

"The sheer naked size of it!" Yerring was astonished at his own vehemence, and tried to continue in a lighter tone. "I mean, I was thinking in terms of millions of years, and we ourselves only live a hundred and twenty or so. That's the twinkle of an eye—"

"To whom?" Tsien shot back. "Not to us, Franz. To us it's a lifetime, and can't be otherwise."

"Yes, I suppose so. But we do quite cheerfully talk about millions of years, and yet we never stop and think just how long that is. We can speak of an age, an eon, but we can't appreciate them."

"Why should we?" Tsien spread his hands, palms upward; the movement made his chest and shoulders heave like a mountain in an earthquake. "No one ever experienced a million years, any more than anyone ever paced out the miles from here to M-39 in Andromeda. They just measured them. Think of yourself as one of Sivachandra's astronomy boys, trying to find the parallax of a star—only you're sighting on a fossil and using radio-carbon dating instead of a telescope."

"How did you know I was think-

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ing of archaeology?" Yerring was startled.

"A guess," said Tsien frankly. "Probably because I've been re-reading the basics of my job—Freud, and Hal Jennings's work on space neuroses. It's symbolic. We're here to make a new beginning, so we look at what we know of other, earlier beginnings which we know to have had successful results. We may recognize intellectually that each beginning is unique, but it comforts us to see resemblances and convince ourselves that we aren't walking into unknown darkness."

"And are we?"

Tsien grinned. "All the time! But on your argument, Franz—to go back to what you were saying—a man is unable to appreciate any period longer than his own lifetime. I disagree. This whole trip of ours has been a contradiction of that. Do you honestly think that Garmisch, who designed the ship, and Yoseida, who devoted his whole life to financing it and finding a crew for it, were incapable of appreciating a longer period than a hundred-odd years? Would you yourself have volunteered to come if you hadn't been thinking in terms of millennia? Because it may be that long before the results are in, and neither you nor I will be around to see it."

Almost reluctantly, Yerring nodded. "I guess you're right," he said.

Towards the end of Tsien's speech, Tessa Lubova had come into the room and taken her place as usual low down on the left-hand side of the table, where the tripborn members of the conference always sat in a tight, exclusive knot.

This sort of thing is going to have to stop, thought Yerring. With the toughest part of the job still ahead, they couldn't have petty jealousies and discriminations.

He raised his voice. "Tessa, I'd like you up here next to me," he said, trying not to make the words sound like an order.

She turned her sullen face, very striking under its crown of dark hair, towards him. "What's the point?" she said sharply. "We"—the word conjured up a sudden vision of Quentin Hatcher, Vera Hassan and Fatima Shan, the other tripborn members of the conference in their places beside her—"never have anything to say, anyway."

The atmosphere seemed to become ten degrees chillier.

"So you've noticed it, have you?" said Tsien softly, as soon as Tessa turned away, and Yerring nodded.

"That's something we weren't bargaining for, isn't it?" he said.

The techs finished checking the recorders and went out, and one by one the remainder of the twenty members of Captain's Conference took their places about the table. Lola Kathodos of engineering sat opposite Yerring; Philippa Vautry of Medical came between him and Tsien; Sivachandra of navigation next to Lola—Yerring greeted each in turn.

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There was a slight stir as George Hattus of ship admin took his place on the left of the captain's chair; he was the most—unknown?—man in the ship. *Like a policeman,* Yerring thought, and remembered back to the days when there had been such people in his daily life; whenever the familiar blue uniform appeared round the corner, even the most law-abiding searched their conscience.

Last of all, precisely on time, Magda Gomez took her place at the top of the table, and they all fell silent, looking towards her.

"Captain's conference, Magda Gomez presiding, declared open at fourteen hundred hours, day ninety-one, year thirty-seven," she said for the benefit of the record. "All right. Now I suppose you want to know why I've called this conference so soon on top of the last one. It's because there have been too many sanitation rumors going round about the approach of Trip's End. People are started to get sloppy and careless. I want it to be borne in mind that when we reach Tau Ceti II, our job will be *beginning*—not over! We came here for a purpose, and we're going to carry it through."

Her gimlet eyes fixed on Sivachandra, and he looked uncomfortable; it was plain she had her own ideas as to who let the rumors get started.

"All right," she said finally. "Let's kill the false reports once for all. Siv, tell 'em when we make Trip's End."

There was a rustle of excitement all round the table, and Yerring sat up in surprise. The first time that question had ever been asked in conference! Whispered comment spread and was swiftly killed among the tripborn.

Sivachandra looked around impressively and waited for complete silence. "We will be in orbit around Tau Ceti II," he said, "in less than fifteen days."

This time the talk was loud and assured; only Tsien sat silent among the exchange of congratulations.

"Quiet!" said Magda at length, and there was quiet. To Lola Kathodos: "Yes?"

"Is that for official circulation?" the engineering officer asked. "My staff have been particularly full of 'inside information,' and I'd like to crush it."

"Yes! Yes, by all means!" Magda looked down at a note in front of her. "All sections will have four hours' celebration time this evening, by the way, but I don't want anyone reporting tomorrow morning with a hangover. We're getting down to real work then. We can put some real meaning into boat drill and things like that from now on. Hatcher!"

Quentin Hatcher looked up.

"The flight simulator comes under you, doesn't it? I'd like you to pick your half-dozen best trainees and run them through final tests.

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Then Siv can decide who gets the chance at the first touchdown."

Hatcher nodded and made a note.

"I'll ask Siv to give us an idea of his first plans in a moment, but before that, has anyone anything they want to say? Engineering? Medical? Admin? Psychology?"

The representatives shook their heads.

"Ecology, what about you?"

Yerring spread his hands. "I was going to have to give some bad news, but the nearness of Trip's End solves the problem."

"Better tell us what it is, anyway."

"Well, we had a major attack of sterility in one of our important cultures; with the drop in productivity, consumption would have been due to exceed output in a month or so. But by that time we'll have raw materials from the planet to tide us over, so it's okay."

Magda glanced to her left. "George, what's the population right now?"

"Uh—two thousand, one hundred forty-nine," said Hattus. "It's one below schedule, but there's a late birth coming up in Franz's section somewhere—hydroponics, I think."

"That's right," confirmed Philippa Vautry. "Edna Barsavitza's having a long pregnancy—she's five days past due. I think I'd better stimulate labor artificially; we won't want advanced pregnancies to cope with when we actually hit orbit." She scribbled a memorandum, and Magda waited for her to finish before speaking again.

"Siv, give them a rundown of the immediate programme, will you?"

The navigation chief put up a pale brown hand and sleeked back his silver hair. "Fifteen days distant may not seem like a lot compared with thirty-seven years," he began. "But we're making for a small planet rather close to its primary, and it's been on the opposite side of its star for the past several weeks. So far, we haven't done much more than confirm that it's where it ought to be."

Someone down the table sniggered; Magda glared at the offender, but Sivachandra continued with unruffled dignity. "We've confirmed the composition of the air by checking the absorption lines, and that's about all. Of course, this is duplication of effort, since the survey teams did a very thorough job when they were here a century ago, but a remote chance does remain, I suppose, that they overlooked something because they weren't thinking of staying.

"So tomorrow we'll be launching some TV-eye missiles. With them, we'll carry out a complete survey of the planet, during our approach run. As soon as they start sending in good pictures, by the way, I'll have them plugged into the multipanel circuit so everyone gets a chance to see them. By the time we go into orbit, we should know what site will suit us best—"

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"Are you landing party?" said Vera Hassan loudly and rudely from the lower end of the table. There was dead silence for a minute.

"What was the point of that, Vera?" said Magda at length, in a voice like an arctic wind.

Vera leaned back in her chair, a defiant expression on her face. "He said which site will suit *us* best. I just want to know if he's one of the people it's going to *have* to suit whether they like it or not."

There were murmurs of agreement from the other tripborn present, and Yerring saw Tessa give a nod of encouragement. Magda slammed her open palm down on the table.

"Vera, we have a job to do, and it's the responsibility of all the crew —not just of part of it. You know as well as I do that Siv isn't landing party. Nor am I; nor is Franz, or any of the earthborn. But it isn't from choice, believe me—we'd change places with you straight off. We're just too old."

Too old: the words echoed in Yerring's mind. Too old at seventy-seven, even if that was scarcely two-thirds of his lifetime gone, because the remaining third was due to be spent in this same ship, with nothing but the knowledge of having achieved a historic aim as compensation. . . .

He felt a sudden shiver go down his spine as he thought: what would it be like to have *nothing* to show for it? What if we fail?

Magda was still speaking in a persuasive tone. "We—all of us, Vera!—have given our lives to an ideal. We aren't going to relax our efforts simply because the period of waiting is over. The greatest task in history lies ahead of us." She touched a switch set in the tabletop. "It lies there!"

No one heard her last words clearly. They had all turned to face the multipanel on the wall, which had just sprung to life. It showed the disc of the reddish sun called Tau Ceti, set against a background of stars which were familiar to them all. But there was a new star among the rest: small, tinged with the same red as its parent.

Trip's End!

Yerring heaved a slow sigh, and stole a covert glance around the group. The earthborn were staring dreamy-eyed at their goal, except for Tsien, who was more interested in the reactions of his companions, but that was natural. The tripborn, however, were sitting stony and impassive, wearing expressions of—contempt? Nausea? Disappointment? He struggled to find a suitable word and rejected each of them in turn.

Finally Magda broke the spell. "That'll do for now. Remember what I said, won't you? Now go and inform your sections about the celebration time tonight. Conference adjourned at fourteen nineteen."

She slumped back in her chair, turning off the multipanel, and with

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a scraping of chairs and shuffling of feet the members started to leave the room. Yerring was rising stiffly to his feet when he felt Hattus's hand on his arm. The admin officer looked grave.

"Magda wants to see heads of departments for a moment," he said. "Won't keep you long."

The pose of efficient domination which Magda had worn at the conference table dropped off her like a cloak when she stepped through the connecting door into her own office. She indicated with a gesture that the others present should sit down, and looked at Tsien. "Well?" she said.

The psychologist nodded. "I'm afraid so."

"As you think best. What did everyone think of that little scene?"

Yerring leaned forward. "The trick with the multipanel, you mean?" he asked. "You hadn't by any chance primed Vera to explode like that and focus the tension, had you?" He tried to sound hopeful, but he knew as he spoke it was wishful thinking, and Magda shook her head with a weary smile.

"No, Tsien warned me something like that might happen. It was an idea he had."

"How can they be so wooden?" Philippa Vautry spoke with vehemence. "Damn it, Tsien, why didn't you foresee this?"

"You're wrong, Phil," the psychologist answered. "We did. At least, Yoseida did. George, get out the orders, will you? We have no choice but to use them now."

Hattus nodded and crossed to the safe set in the wall. Opening it, he took out a sheaf of envelopes with person-keyed destruction seals which would render the contents illegible if anyone but the addressee tried to open them, and handed the little bundle to Magda.

"I myself," the captain began, "don't know what's in these envelopes. I was told, though, during one of the final briefings George and I attended before we left Earth, that I might be called on to use certain emergency procedures at the request of the psychological section. Since Tsien first told me he was worried about the tripborns' attitude to landing, I've suspected one of the procedures might deal with that, and I was right.

"All of us here had the privilege of knowing Yoseida in person, and working under his guidance before the ship left. I think it's plain that only a man who was completely devoted to the high ideal of spreading mankind through the galaxy could have visualized so far in advance the need for plans to cover such a fantastic and unlikely contingency."

She sounded a little self-conscious as she finished the speech; it was platitudinous to say such things to people who had also known and admired that fanatical old Asiatic, but Yerring knew it was only her respect and regard speaking for her,

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and nodded his approval. The others followed suit.

"We can't let him down now," said George Hattus, in his soft, agreeable voice. "A man like that deserves the memorial of success. I suspect what's in these orders may not be entirely pleasant to enforce, but we owe it to his memory to carry this thing through."

Taking the envelopes back from Magda, he distributed them; the recipients eyed them curiously but awaited permission to open them from the captain.

"Fifteen days isn't a long time to re-orient twenty-one hundred people," said Tsien thoughtfully. "It means this action will be pretty drastic."

"What do you mean?" said Philippa indignantly. "There are nearly two hundred and fifty earth-born, remember!"

Tsien nodded vigorously, but Yerring had the impression that he was cursing himself for making a slip. Magda interrupted before he was able to speak.

"Take these orders and read them in your own offices," she said. "On no account let them get anywhere where the tripborn can see them. All right, on your way. Good luck."

All except Hattus rose and went out. In the corridor, Yerring caught Tsien's eye and drew him aside for a moment.

"*Were* you making a mistake when you said twenty-one hundred?" he inquired doubtfully. "It seems ridiculous—but I got the idea you meant it!"

The psychologist looked him soberly in the eye. "Franz, when did you last use the picture setting of the multipanel in your office?"

Yerring paused, dumbfounded. "Why—it must have been all of three years ago!" he exclaimed. "I hardly use it at all now except as a mirror."

"Exactly," said Tsien heavily, and walked on.

Yerring returned to his own section with his mind in turmoil. Tsien's sudden question had taken him by surprise; it brought back with discomforting vividness the terror he had experienced when he wondered what it would be like to know he had wasted his life in vain.

He passed the envelope from hand to hand, impatient to gain the security of his own office and find out what it was that constituted their last defense against failure.

But before that he would have to announce the news given at the conference to his own staff. Tessa would already be back, and could quite well have done it, but he knew it had not entered her head; like all the tripborn, she insisted with almost childish obstinacy that he exercise the full authority to which his status entitled him.

He tucked the envelope securely and inconspicuously into a pocket and stepped through the sliding door into the warm, slightly steamy

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air of the hydroponics section. Sometimes he thought, looking down the lines of transparent culture tubes towards the blindingly bright focus of the light area, that it was odd how an ecological cycle which had begun as a planet-sized unit could be fined down to essentials and tucked into the comparatively tiny hull of this ship.

He followed the direction of the culture flow until he found Tessa studying a sample drawn from the mixture. He called to her, and she looked up slowly.

"I suppose you want to address the hands?" she said, putting down the testing phial. "I'll go and round them up for you." There was a faint sneer on her face, as if she were implying that Yerring could not be sure they would come at his order.

And in a way, Yerring was forced to admit, she was right. He had begun the trip with a staff of twenty-one, all earthborn—naturally—but since biology and ecology were two subjects the colonists would need to know backwards, they had gradually been transferred off to ship administration. Now he had a staff of a hundred and three, but he was the only remaining earthborn member of it.

Must remember to have some of my old assistants re-posted while we're in orbit, he reminded himself. *We'll need them on the way home.*

He felt for his dark glasses and put them on before walking out across the big open space between the tubes where dead cultures were slued for drying, lysis and re-cycling as organic intake material. One by one, the hands came in—not talking, not excited, just coming in.

He tried to remember how he had pictured the enthusiasm which would greet the news of Trip's End, thirty-seven years ago. Very different from this; the passive concentration in their faces reminded him of what Tessa had said in the conference room—"We never have anything to say, anyway."

And it was true.

What had happened to all the talking and shouting? *When I go into the conference room, I start a conversation with Tsien or someone; Tessa sits alone, not speaking even when one of her own generation joins her.*

What did these taciturn people do off duty? *Shock; I have scarcely an idea. They eat and watch the shows on the panels, sometimes we have dances they attend, some of them play music and some read books from the microfilm library; that's not the point. For example: could they fall in love?*

Are they really alive?

These had been children like any other children: noisy, inquisitive, foolhardy, disobedient. If they had been otherwise, Tsien as director of the education staff would have been alarmed.

And yet they had grown up into these frighteningly self-contained people who could run the ship bet-

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ter than the earthborn any time they put their minds to it, and still refused to take the initiative. . . .

"Everyone's here," said Tessa, just loudly enough to break through his musing, and he scrambled up on a breeding chest to make his announcement.

They took it as they took everything else, as if they were adding it to some store of information already prepared for use in some calculation Yerring could not guess at.

When he had delivered his message and got no response, his tension boiled over.

"If you knew how we envy you!" he exploded.

That startled them. He rushed on: "You have your whole lives to look forward to on a good world, a brand-new planet! We gave up ours to see you achieve that aim, and I for one don't regret it—but I wish I could be your age again and take your place!"

He got down blindly to the floor and walked hurriedly into the protection of an aisle between the banks of tubes.

Someone was standing there, immobile; with his dark glasses still on, Yerring could not tell who it was until he stirred and spoke. It was Quentin Hatcher.

"What are you doing here?" said Yerring gruffly, half-ashamed of his outburst.

"I came to see Tessa," said Hatcher placidly, and Yerring remembered that he had known in a vague way the two were having an affair; promiscuity had to be encouraged to ensure the mixing of all available genetic factors.

He wanted to pass on to his office and read the orders in his pocket, but Hatcher looked at him steadily, and he did not dare even feel to make certain they were still there. "Are you in a hurry?" the other asked.

With an effort Yerring controlled himself; it would be a mistake to admit he was in fact in haste, when Tessa knew quite well there was no urgent work on hand in the section. Someone might draw the right conclusion. He shook his head. "Did you want something?"

"Yes. You earthborn are very free with your description of this planet as a 'good' world"—Yerring could hear the quotation marks. "But I know nothing about it beyond the fact that it's said to be habitable. Why?"

"Tessa could tell you as well as I can."

"Tessa could not." The girl moved out of shadow, and he wondered how long she had stood there listening. "I do know more about the planet than Quentin does, but it's going to be my job, apparently."

Yerring gave ground reluctantly. "You've found the reason," he said, thinking fast. "You'd have to ask the psychological section for full details, but I know the rough idea. When we set up the colony—"

"We?" whispered Hatcher, with

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a glance at the girl; Yerring caught the word but pretended he hadn't, even to the extent of cancelling an impulse to frown at the echo of Vera Hassan's attack on Sivachandra.

He went on: "—we've got to have the best possible combination of experts to get the work done in minimum time. That's why, even though you know nothing about Cetian ecology, for example, you're three times as good a metallurgist and electronics engineer as someone your age on Earth. You're a specialist. So's Tessa. There's going to be so much to do at Trip's End that we can't afford to waste time teaching people knowledge they can't use. Of course, the data from the early survey is in the library for anyone to read who wants it—"

"I know," said Hatcher bitterly. "I've looked at it. But I haven't the time to teach myself the basics I need to follow it."

This time Yerring had to frown. He noticed that Tessa had stepped out of sight again.

"Give it to me in simple language," said Hatcher, managing to make it seem that Yerring would be in the wrong if he refused. "What kind of a planet *is* this?"

Yerring was tempted to snap that it was habitable and wasn't that good enough? Instead, he put it another way.

"Promising enough for us to have begun and carried through a project lasting all these years to colonize it, and that means very good indeed."

"If it's so habitable, why isn't it inhabited?"

"Because it hasn't got a moon." Yerring was falling automatically into the teaching style he used when taking trainee classes in the ship's school. "There's a lot of life in the sea—some of it eatable, by the way, which is useful—but the oxygen in the air is replenished only by colonies of free-floating algae which drift across the oceans. We'll probably supplement them with some of our own species.

"But on Earth, life was driven from the sea to the land largely by the effect of tides. Without a moon, the sea-level doesn't change significantly or frequently enough to produce land life."

Tessa had moved back into his range of vision during the last sentence. "That means," she put in sourly, "there's nothing to bind eroded rock into soil. It's all desert."

"So was Mars!" said Yerring sharply. "And it didn't even have good air. We took it over and remade it until it was nearly as good as Earth. This world could well be made *better*." After a pause he added pleadingly, "Do you honestly think we'd have started on this trip if it wasn't worth it?"

"You started on this trip," said Hatcher softly. "We hadn't much choice, had we?"

Yerring was silent.

"Suppose it's changed since the survey teams were here?" Hatcher pursued. "After all, it was nearly

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a hundred years ago that they discovered this system—"

"But a hundred years is"—Yerring remembered the way he had put it to Tsien—"a twinkle of an eye when you're thinking of biological processes. No, there won't be any important change."

"So you say," insisted Hatcher doggedly. "But what will we do if it isn't the paradise you've promised us? Has anyone thought about that?"

Yerring had been thinking of it—entirely too recently for the remark to be pleasant. He turned on his heel.

"It will be!" he threw over his shoulder. And as he drew out of earshot, he muttered, "It's *got* to be!"

Alone in the privacy of his office, he sat down at the desk and put his hand in his pocket to take out the orders. He experienced a momentary surge of panic as his hand closed on nothing.

Then he felt in the other pocket, and breathed a sigh when he found the familiar oblong shape. *Odd; I could have sworn it was in the other—*

But when he examined the seal carefully, it showed no signs of tampering.

As he prepared to unfasten it, his eye fell on the multipanel, and he recalled Tsien's question. Was it really three years since he had used it last as a picture?

He paused to think of the scenes he had liked most out of the enormous repertoire stored as electronic memory patterns in the master library. That flower garden, for instance—the play of colors was magnificent. But so was the sunset scene, and neither was as majestic as the view of Niagara, or as nostalgic as the riot of foliage under the dome of Copernicus Crater on the moon, where he had spent his first holiday off Earth as a small boy, stalking his younger brother through the "jungle" . . .

He took out the index of settings, which he had once had almost by heart, from a drawer, and chose one which had always been a particular favorite of his: a panorama of wheat fields in North America. Suddenly, yellow corn seemed to stretch into the distance through the wall when he tripped the switch; on the horizon, it melted into blue sky. Mile upon square mile of earth-surface, and every last inch of it bearing for the benefit of man!

And yet, somehow, it didn't provide the shiver of awe which it had once induced.

He dismissed the reflection with annoyance, and broke the seal on the envelope. There was only one sheet of paper inside; closely typed, it ran:

Deliver at the captain's discretion to the senior ecologist.

It is considered possible by the psychologists who have studied the likely mental development of the

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crew after so long in space, that some measure of unconscious resistance to the prospect of landing may arise when the time of planetfall draws near. This is especially to be looked for in the case of those who, having been born on board, will not actually have set foot on terra firma.

As it has been explained to me, there is a close mental analogy between landing from a ship such as this, and the process of birth. A child objects to being born; it longs for the comfort and security of the womb to some extent for the rest of its life. The environment of the ship represents an extension of similar security into adulthood.

In the event of such a situation arising, action is to be taken as briefly outlined below WHEN THE SHIP IS CLOSE ENOUGH TO THE PLANET FOR CONDITIONS ON BOARD TO REMAIN BEARABLE UNTIL IT IS REACHED. An absolute maximum of two weeks is suggested; within that limit, time of commencement is left wholly to the psychological section.

(a) The medical officer is to prepare sufficient quantities of a suggestibility-heightening drug to render all affected members of the crew susceptible to influences designed for combating the subconscious compulsion against landing.

(b) The ecologist is to select a method of administering the drug. It will be essential to exclude those personnel who will be returning to Earth to report the success of the mission, and whose business on the planet is only temporary; aerosol administration is therefore inadvisable.

(c) The senior psychologist is to organize counter-compulsions, given in detail in an appendix to be delivered only to that officer, directed to instilling a distaste for shipside conditions in the crew.

This expedient is analogous to shock treatment, and is to be resorted to in cases of emergency only. The chance of permanent mental effects, however, is estimated at less than one per cent. Man is a planetary animal; any other environment is unnatural to him, and re-adaptation will proceed much more smoothly than did the original adaptation to spatial conditions.

Yerring read the document through carefully, a frown deepening on his forehead, until he came to the signature. He looked at it closely. It was Yoseida's own.

Instantly, a curtain seemed to roll back in his mind, and he was once again a youth listening with adoration to the plans of a thin, fanatical Asiatic who was set on sending men out among the stars, and resolving that when the ship was built, he would be one of the crew. Yoseida was that sort of a man; in another age he would have conquered himself an empire at the head of an army prepared to die on his casual command, or formed a business concern and controlled the lives of

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millions, decreed whether they would starve or surfeit. . . .

The old idealism was still smoldering in Yerring's mind, like a fire burning under a heap of ashes. He clenched his fists with determination. In that moment he was more certain of one thing than he had ever been: they were not going to fail!

He reached for the diet charts and studied them with care. The drug would have to reach everyone it was intended for, yet those who had to avoid it must be able to refuse the item containing it without exciting suspicion. It was an interesting problem.

He made his choice and sat back in his chair. This was a job he was going to have to do himself, obviously; he was the only earthborn left in the ecological section. None of the tripborn could be expected to understand just what this journey meant to the race of man, and to farsighted geniuses like Yoseida, who had given his life to this ideal. . . .

He would have to add it to the diet when the section was deserted, therefore, and during tonight's celebration was the obvious moment. The question was whether Philippa would have enough of the drug ready by then.

He reached for the phone, and then changed his mind; a tripborn technician might be monitoring the wires, looking for a fault. He would have to go down to medical section.

At the door, he gave his habitual glance around, and saw with momentary surprise that the multipanel was blank. He did not remember turning off the picture.

Sounds of singing from the mess rang the length of the empty corridors as he walked slowly through semi-darkness towards the dietary room. At least the tripborn were still human enough to enjoy themselves. He kept his mind blank and receptive to every stir of noise, acutely aware of the jar of reddish liquid in his hand. He hoped it might pass for a drink if anyone saw him.

He kept reminding himself that the section would be deserted; nonetheless, he found himself rehearsing the phrases of excuse he would have to use if anyone found him here. But as he stepped into the dietary room, he realized that the singing from the mess adjacent would drown any slight sound he made himself; if there was anyone in the sleeping quarters opposite, where his own staff slept, he would notice nothing.

The synthesisers which turned the raw material of the cultures into flavorsome, substantial and nourishing food were quietly humming; the air was warm, and had a pleasant rich smell. He knew the layout too well to bother turning on the lights; he crossed the floor swiftly, opened the additive cap on one of the synthesisers, and poured a careful half of the reddish liquid into the

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mixture. Then he moved to the next unit and repeated the process again.

Closing the caps, he slipped the empty jar into a re-cycler for reduction to its elements and absorption into the resources of the ship. It was not until he was safely outside again in the corridor that he dared admit he had successfully completed his task.

In the humming warmth of the dietary room, Tessa Lubova came gracefully out of the cramped corner between two synthesisers where she had been hiding, and crossed to the door of the sleeping quarters. She made no attempt to discover what had been added to the food supply, nor did her face betray any hint of emotion whatsoever.

It was heartening to see the determination on the faces of his companions, thought Yerring, and knew that the same resolution inspired himself. Even when Magda passed a tired hand across her forehead, it was with impatience at her own inadequacy.

"Phil, how did the tests go?" she asked. "Maybe you'd better say what you actually did."

The doctor nodded. "Well, we took blood samples from random members of the crew, ostensibly to be included in the equipment of the TV-eyes to detect bacteria which can breed in them. We shall be doing that anyway, of course—can't have anyone getting suspicious. But the samples we took show a hundred per cent incidence of the drug in the tripborn."

"That's Franz's doing," said Magda, with a glance at Yerring. "You picked an excellent medium to give it in. Right. Siv, the missiles were launched this morning—when do you expect the first pictures in?"

"Assuming a minimum of solar activity, late this evening," said the navigation officer. "They won't be of good quality over this distance, but they'll be clear enough to give us a rough idea."

"Fine. Plug them into the panels as soon as you can. Tsien wants to see what their effect is before going ahead."

The psychologist grunted heavily. "I'm still hoping we may not have to do this," he admitted. "It'll be a foul job with only a few of my staff to help me out."

"How's that again?" said Lola Kathodos.

"Well, naturally," Tsien shrugged, "I can't ask the tripborn to work on this, and as it turns out I can't even rely on all the earthborn."

"That's bad," said Lola complacently. "Well, I'm glad to say I'm every bit as determined to see this job through as I was when we left Earth."

"Of course you are," said Tsien with an effort at reassurance. "All of us in this room are. Not everyone is affected by the tripborns' apathy."

But I am, thought Yerring, and

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found Tsien's eyes on him. *After all this time, the man must practically be able to read my mind.*

"I think it might be a good idea to tell us what you'll have to do," put in Hattus quietly. "Franz, for example, has no one but tripborn under him now, and he's worried about production as things are. Will he suffer any more for what you're doing?"

"Possibly." Tsien was dubious. "We'll be using verbal suggestion, of course—if any of you want hints on how to weight your orders to your staff, I'll be glad to advise you. But we ourselves are going through the book—subsonics, trigger smells, tactile suggestion. There's latent claustrophobia for the asking, too, of course; we'll have to touch off as much of that as possible."

"And what if it doesn't work?" Sivachandra voiced the idea which Yerring had not dared utter.

"Of course it'll work," said Tsien bluntly. "Believe me, I've looked after the psychological state of the crew long enough to be certain of that. My only reservation is that we shouldn't have had to use it." He hunched forward.

"Every mass entertainment we've put out during the voyage, every programme of tuition in the school, every talk and every briefing—they've all been slanted towards the resumption of planetside life. That's why we've refused to permit the germination of any culture with a shipside background; we've taken special note of people with originality and qualities of leadership and diverted their aims, in case they made too great an impression on their fellows. The authority and the power is vested in the earthborn; we insisted on holding the prospect of independence up as a carrot for a donkey, and tried to make Trip's End the focal point of all the tripborns' ambition. The entire crew should have a load of subconscious commands twice as strong as their inherent womb-retreat factor."

"*Should* have!" echoed Philippa. "We even carried it so far as to develop easy birthing methods, to reduce birth trauma to a minimum. And yet look what we've wound up with!"

"There's something wrong," said Yerring. He watched Tsien's face as he spoke. "Isn't there?"

"Yes," the psychologist admitted. "Somewhere along the line, this trip has altered our mental attitudes in a way no one could foresee. Why? Because this ship is the first completely closed subplanetary ecological unit, Franz?"

Yerring shook his head. "It's not that easy. The exploration ships of a century ago were completely closed, too; what's more, the crews —except those which visited this system, naturally—found nowhere to land, so they spent the period of the round trip on board. Yet they were only mildly maladjusted when they returned to Earth."

"Yes, I've pored over their psy-

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chological records long enough to be sure of that. What's the difference, then?"

"That we've bred in this environment?" suggested Hattus shrewdly.

Tsien shrugged. "Could be. But what else could we do? Load a cargo of babes-in-arms when we took off? Of course not! All the successful pioneering groups in history have included widely assorted age-ranges. By deciding to expand our population *en route,* we manage to arrive with not only a larger complement of capable workers than if we had kept to our original strength, but with about two hundred children who can be trained to take their places in the colony."

He looked around the room. "All of us here have grown children now; how many of us are grandparents besides myself?" Four people nodded—Magda, Hattus, Sivachandra and Lola. "And the rest of you will be soon; when we land, we can expand our population without foreseeable limit. No, if this revulsion against landing is an inescapable result of breeding in the ship, we're sunk, and human expansion to the stars is going to have to await the coming of a faster-than-light drive."

"Which is still impossible to the best of our knowledge," said Sivachandra flatly. "But—well, I don't know quite why, but somehow I'm *certain* this revulsion against landing is just a phase. We'll get around it."

The others echoed his confidence in assured voices, and Tsien said emphatically, "Of course we shan't admit defeat!"

There was silence for a while. Finally Magda stirred. "Siv, how about the landing itself?" she inquired.

"As soon as we hang up in orbit, we'll have a landing boat ready to go down. We're running the pilot tests all the time."

"Send your best man along to me before you tell him he's going," Tsien put in. "I'll need to make sure the conditioning has taken."

"Who is he—do you know yet?" asked Philippa.

Sivachandra shook his head; the lie was beautifully camouflaged, but Yerring was sure he could see through it. "We're down to a short list of half a dozen or so," he said. "I can't say yet which of them will actually go."

"Okay," Magda frowned. "Anything else before we go back to our jobs? Yes, Franz?"

"Suppose one of the tripborn *has* missed the drug," Yerring suggested. "Suppose he spots Tsien's 'influences'—what do we tell him then?"

"A good point," the captain nodded. "George, any ideas?"

"Say we're slowing to turn into orbit," Hattus offered. "It's producing stress noises in the fabric of the hull. Does that sound convincing, Siv?"

"Not to anyone in my section, or Lola's," Sivachandra answered.

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"But to anyone else it might. It'll do, anyway."

There were no further comments; they rose and went out. In the passage, Yerring drew Sivachandra aside.

"You've already picked the man to make the first touchdown, haven't you?" he said flatly. "Why not admit it?"

Sivachandra's pale brown face remained enigmatic. "I had reasons for not mentioning his name in there," he said.

"Who is it?"

"Felipe Vautry. He's Philippa's son."

And then he realized, as Yerring's face went blank, he had made a slip after all. "And yours?" he said in a questioning tone.

"Yes," agreed Yerring. "And mine."

Does he know, himself? Yerring's mind wandered all round the question.

There could really be no such thing as a home in the ship; it *was* home, in itself, and therefore the ties of parenthood were not strong. He had three children—Felipe and two daughters—but they had gone into the crèche under the efficient, understanding care of the nursing staff, and then through the ship's school; they were dropped, like pieces of a jigsaw puzzle, into places in the crew exactly the right shape to receive them.

After that, they were just—trip-born.

How old is Felipe now, anyway? Twenty-six? Twenty-eight?

"We have two courses of action to prepare for," he said doggedly to Tessa, who sat impassively on the far side of his desk. "Which we choose, depends on whether the TV-eyes find an ideal spot for the settlement soon, or not. We'll know in another day or two—you've heard that the first pictures are going to be relayed this evening on the panels?"

Silence.

"Tessa!"

The girl's sullen face turned towards him, and he demanded, "Were you listening?"

"Yes."

"Well, why not answer my question?"

"Oh, I wasn't listening to *you*," she said with a hint of contempt in her tone. "I was listening to the ship."

"What about it?" Yerring hoped that the sudden guarded alertness in his manner escaped her. "We're slowing down to fall into orbit, remember—it alters the stress noises of the hull. It was much the same while we were accelerating away from the solar system, I remember," he added glibly, thinking that if he was going to tell a lie it might as well be a good one. He had no way of knowing whether she accepted it or not, but ploughed on.

"Now pay some attention, for goodness' sake! Our position is getting damned near dangerous, and you're supposed to be director of

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ecology for the settlement, you know. As I was going to say: our margin for error is dropping like a stone. Our resources will take us barely two weeks past orbit as things stand. If we can land the advance party straight away, that'll lighten our burden enough to get us by; if not, we're going to have to import raw materials from the planet to tide us over."

He reached out and turned on the multipanel, choosing a view of some Martian plantations; it had just occurred to him that the surface of that world had been similar to that of Trip's End under its reddish sun, and the proof it had been made habitable was a useful semantic factor to work on the minds of the tripborn. He was surprised it hadn't struck Tsien.

He ran quickly through the arrangements which needed to be made for either contingency, and finished, "Pass on what I've said to the rest of the staff as they need it. Sivachandra will be asking for opinions on the site for the colony, by the way; you ought to make the decision rather than me, since after all you'll be living there." He had to avoid saying 'have to live there' by a conscious effort.

"Thank you for thinking of that," said Tessa, and he glanced at her sharply, wondering if she was being sarcastic. "Is that all?"

"Yes, that's all."

She rose with her usual fluid grace and went out; Yerring waited till the door had closed and then brought in the observation circuit of the multipanel, anxious not to miss a moment of the pictures relayed from the planet. He had been staring at the blankly luminous surface of the screen for fully fifteen seconds before he realized it had previously been equally blank.

What happened to the picture of Mars? This absent-minded turning off of the panel—

He pulled the index of panel settings out of the drawer again and hastily thumbed through it. When he had checked twice to make absolutely sure, he sat back and drew a deep breath.

No wonder Tsien hadn't thought of using that picture of Mars as a tool to work on the tripborn.

There wasn't one.

Badly frightened, he got blindly to his feet and walked down the corridor the short distance to the mess. Just as he reached it, Hattus's voice echoed from the public address speakers, warning that the relayed views from the missiles were about to be put on the panels.

Instantly, that drove his preoccupation away, and he ran into the mess-hall. It was already half-full of people arriving for the evening meal, but he ignored them and sat alone where he could get a good view of a panel.

The first pictures were blurred and indistinct, but as the operators got the feel of the circuit, and grew more practiced at cutting in the one which was currently giving the best

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reception, they improved rapidly. Even the color registration was good; Yerring could tell that from so often studying the photographs taken by the survey teams.

Good, thought Yerring, catching sight of one of the gigantic free-floating drifts of algae which kept the air oxygen-high; *if there are many more that size, we won't have to worry about force-breeding our own strains to help out.*

There was an ache in him at seeing the surface of their destination and knowing: *it's only a little way now!* It was like—well, like coming home.

Tripborn came and went around him; the earthborn, their eyes glued to the panels, let their food grow cold untasted, or—if they had to go elsewhere and thus lose sight of the pictures for even an instant—reminded themselves that anything important they missed would be on film with the rest of the records. He scarcely noticed when Tsien dropped into the chair next to him, except to glance and see who it was. It was several minutes later that he turned to face the other and breathe, "Isn't it wonderful?"

But the quizzical look on the psychologist's face cut through the warmth and excitement in him. Abruptly, he sobered.

"Is it bad?" he asked.

"Pretty bad," acknowledged Tsien. "I'd hoped the visual stimulus would touch off the drive we've tried to instil. It hasn't."

"But—you mean you haven't started your programme?"

"No!" Tsien stared. "Who told you we had?"

Yerring explained about Tessa listening to the ship, and Tsien looked relieved. "That's all right," he said. "I was thinking about something which happened this afternoon. To one of my own earthborn staff. He was convinced he was susceptible to the command to leave the ship, and tried to do it through an airlock right now."

The expression on Tsien's face scared Yerring; it was no longer that of his habitual self-assurance and confidence—he looked gravely disturbed.

"I wanted to ask you about something," he said slowly, and told Tsien of the Martian picture episode. When he had finished, the psychologist nodded.

"A consequence of stress release, Franz. All through this trip, we earthborn have been being wound up like a violin string, tighter and tighter. Now we're being let down, we can expect some pretty funny results. Nothing to worry about, in your case—it was autohypnosis from your seeing an identity between the conquest of Mars and the work to be done at Trip's End. Go down to Philippa before you go to bed and ask her for a sedative, will you?"

Yerring nodded; a comforting amount of Tsien's assurance had returned during his last speech, and he felt relieved.

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"Well, I've been here long enough—can't keep putting off the decision," said Tsien abruptly. "Excuse me. I've got to go kick us off the ship."

Yerring nodded and watched him go. Somehow, he was no longer so keen to watch the panels, and he finished his meal and left the mess without reluctance.

The usual evening pastimes had been suspended tonight; every panel in the ship seemed to be glowing with the TV-eye transmission. Restlessly, he wandered through his own section to see the night shift, passing through hydroponics, biolab, feedmix monitoring, air control, master water room, dietary room—all the space which formed the lungs, heart and digestive organs of the ship. The staff were going about their tasks as usual: adjusting controls, setting up new programming, testing the cultures.

He paused beside a young worker as he took a sample and studied it, seeming not to notice Yerring next to him. "What's the incidence of sterility now?" he asked for want of anything else to say.

The boy turned calm eyes on him. "Going down," he said.

Irritated—by what, he could not tell—Yerring went on, "How do you think you're going to like working with soil when we land?"

"I won't," said the boy, and replaced the sample in the culture tube; it mingled with the rest of the semi-liquid mass and joined the slow flow towards the light-irradiation area. Then he passed to the next tube and bent to repeat the process.

Baffled, Yerring did not try to stop him; there had been something so final about those two words. And they sounded not only final.

They sounded utterly honest.

Man had made the environment of the ship, and therefore it was as seemed good to him; the environment of a planet, on the other hand, had made man, and perhaps that was deflating to remember.

But we aren't going to fail!

They had planned for this time before the ship had even been half-built, and the procedure went into operation with oiled smoothness. That was one advantage of having everyone a part of a jigsaw, thought Yerring—of specializing. Ship admin: *who goes down when and with what cargo?* Ecology: *what can we use when we get there, what do we take?* Navigation: *at what height do we orbit exactly over the colony?* Psychological: *are we going to—?*

That was a question no one asked in full. There was always the subtle, nagging knowledge at the edge of consciousness: *we are having to force these people into something we gave up our lives for gladly.*

Somehow, it seemed—unworthy.

But the days passed in a flurry of work, until the ship was safely in its orbit, and they were ready to make the first landing.

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Yerring walked slowly through the corridors towards a section of the ship he had almost forgotten existed. He had meant—somehow—to find time to get to know this pilot who was going to be remembered by the colonists all through their history. But the days had gone by, and there had been no time. Now, as he scanned the group around the boat lock, he had to think twice before he recognized this tall, black-haired young man with set face and deep, unsmiling eyes.

Sivachandra and Lola Kathodos were directing final checks of the instruments and engines of the boat; a group of orderlies from Medical, and Tsien and some of his staff, surrounded the tall Felipe. He met Philippa's eye as he approached, and wondered if she was thinking the same thing: that perhaps they should have taken another few years to plan and found a way in which *father* and *mother* might remain more than biologically inevitable terms.

They had been in love, he remembered—but each, to the other, had inescapably been one of many, and now there was hardly more than a flicker of memory to share.

He dropped his eyes and found Tsien approaching, mopping his forehead. The psychologist looked cautiously optimistic.

"Is everything all right?" Yerring demanded.

"As far as we can tell. Medically, Phil says, he's as fit as possible, and we've done all in our power to make the landing easy for him."

There was a call from Sivachandra, who was studying his wrist chronometer. "Felipe!" he said. "Better go in now."

Yerring could stand back no longer; he pushed aside a couple of shipborn medical orderlies and grasped Felipe's hand. "Good luck!" he said with sudden fervency.

And then he turned slowly away, realizing that there was no sense of history in this son of his; he had been told to do a job, and that was all.

Perhaps we should have harped on the wonder of it all, he thought; perhaps we could have brought home to them how marvelous it is that beings spawned of the hot seas of a ball of rock enveloped by gas could have spread across the gap between the stars. . . .

It was too late to think of that now.

And yet—a fierce pride burned in him—we've done it! Whether they realize it or not, we've done something without equal in the universe; we've planned and waited and carried it through until success is in our grasp.

"Let's go up to navigation section," said Tsien softly. "We can watch it all from there."

Yerring suffered himself to follow the psychologist, glancing back only once, to see the door of the little boat closing behind Felipe.

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It seemed like an age before the tell-tales on the hull of the boat reported the first whispers of atmosphere. In the navigation section, a tense, excited group faced the banks of screens and the instrument panels which kept them in contact with Felipe. At intervals he told them in a flat, monotonous voice that he was still all right.

Yerring heaved a sigh, and grew conscious that Philippa was standing next to him; in a gesture he was scarcely conscious of, so deep a need did it fulfill, he put an arm around her, and she gave him a quick, wan smile.

The red surface of Trip's End loomed up on the screens; rough-featured mountains gashed by narrow, swift-flowing rivers passed under the boat as it rushed towards the broad flat expanse of ground near the sea which was to be their first settlement.

"I can see the landing-place now," Felipe called at last. There was no hint of strain in his tone, and Yerring gave Tsien an inquiring, hopeful look. The psychologist nodded and wiped away a fresh stream of sweat.

The rocket motors cut in to check the boat's progress; it tilted and settled on its tail, finding firm footing. "He's made it," reported Sivachandra from his post at the instrument panel—and his companions went wild. They shouted congratulations to Felipe and Tsien, shook hands and kissed each other —even taciturn, sober Hattus seized Magda by the arm and tried to make her dance.

They recovered their calmness slowly, and Tsien shouldered his way through them towards the microphone. "How is it where you are, Felipe?"

"As I expected." The voice was still toneless, with a hint of enormous patience in it.

"How's the air?" called Magda, glancing at the repeater dials.

"Good," said Sivachandra. "A full twenty per cent oxygen."

"Well, open the door and go out!" Magda exclaimed.

The screen showing the view inside the boat revealed Felipe silently undoing his harness and getting to his feet. He started towards the door, slowly, as if walking under water.

"High gravity?" said Lola suddenly. "Look how he's moving!"

"Can't be," said Hattus flatly. "The gravity's barely a twentieth higher than aboard ship."

A chill of premonition seemed to go up Yerring's spine as he watched Felipe undog the door. He wanted to shout, "Stop him! Stop him!"

But before he could utter the words, they could see over Felipe's shoulder the rolling landscape, dying into red hills on the skyline. The sky was not blue, but it was at least not black.

Still with the air of a man in a trance, Felipe stepped over the sill of the door and climbed the ladder to the ground. A camera in an ex-

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ternal housing tracked down with him until he was standing at the foot of the ladder, turning to look round. The tension was beyond bearing.

And then he screamed.

For an instant there was absolute stillness in the room, only the echoes of the cry dying into silence. Tsien was staring at the screen as if he did not believe his eyes.

"What's wrong?" demanded Magda, rounding on him. "Look at him!" She gestured; the pilot had fallen to the ground, knees drawn up to his chin, and his face was slack-jawed, staring-eyed.

The question was taken up, each person present trying to find refuge from despair in accusations against Tsien. The psychologist buried his head in his hands.

"What's happened is obvious," he muttered. "We didn't condition him properly."

"But you said you couldn't fail," Philippa insisted, starting forward. Her voice was angrily pleading.

"I thought we couldn't." Tsien dropped his hands. "No human being should have been able to resist our efforts. But somehow—"

Hattus stiffened, and they all turned and looked to see what had startled him.

The tripborn technicians in the room had quietly moved from their posts; now they stood about the officers—not speaking—their faces threatening, their attitude vigilant and alert.

Quentin Hatcher moved out from among them when the silence had stretched to breaking point; his face was peaceful, his manner assured and confident.

"I think now you should be convinced," he said. "You have seen for yourselves what we have known must happen for a long time. I assure you we regret the necessity to take over the ship from you, but you are no longer capable of facing facts."

"Mutiny . . ." breathed Magda as if she was blaspheming.

"Say rather that the real is supplanting the ideal." He paused as Sivachandra made a move towards him, only to be deterred by a minute adjustment of position from one of the tripborn near him. "We do not intend to harm you—in fact, you will be permitted to go about your sections freely when you have accepted one thing. *There must be no more talk of landing.*"

"You're mad!" said Hattus huskily. "You're insane!"

Hatcher laughed shortly. "Ask the psychologist," he suggested.

"You knew!" Tsien declared. "You must have known about the conditioning."

"Yes, we knew. Tessa Lubova watched Yerring putting the drug into the synthesizers."

"But you ate the food," Yerring broke in. "I know you did, because I saw you. How did you avoid the effects? What did you do?"

"Nothing," Hatcher answered, with a lift of one shoulder. "There

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was no need. You see, we knew it would not work."

They were breaking down now; Yerring felt Philippa collapse against his arm, and Sivachandra had begun to sob, dry-eyed; Magda was biting her nails, seeming not to dare take her gaze from Hatcher's face.

He spoke in a voice whose steadiness surprised him. "But we shall have to land, Hatcher. Or we will starve to death."

Hatcher lifted an eyebrow at him. He went on, "Our own resources will provide food, air and water enough for only two more weeks in orbit; our numbers are too great."

Hatcher shrugged. "Then we'll bring material up from the surface. Or since you tripborn are so determined to found your colony, why should you not take our place?"

"That would only postpone the end." Yerring felt a desperate fear growing in his mind; he had to convince this bland young man of the truth in his arguments, or they had no chance left at all. "The boats were designed for shipping cargo down, not up. Once we start using forty tons of fuel to bring one ton of material up from the planet, we're finished. Ask Tessa," he finished pleadingly. "She'll tell you I'm speaking the truth."

"I didn't know it was that bad." Magda stared at him.

"It wouldn't have been. With our population cut to what it was when we started out, we could have imported enough materials to last us the whole voyage back." Yerring tried not to let the implications in his statements come home to him; he knew he would break down if they did.

"I thought this was a closed system," Lola said, staring.

"It is. Landing on the planet would open it, though."

"Then what are you talking about?" said Hatcher with exaggerated patience. "Didn't you hear what I said? We are not landing! We are *not* landing!"

Yerring mastered his growing terror and thought of the sharpest way to bring it home. "Then you'll nominate one thousand people to be killed," he said.

There was a pause. Hatcher broke it in quite a different voice. "What did you say?"

"That's better. Start listening with your mind instead of your muscles. This ship is a closed system, but it's overpopulated. You stand there and tie up water, calcium, carbon, oxygen, nitrogen, about eighty or a hundred pounds of valuable organic compounds—*now* do you see what I'm getting at? At half its present population, the ship could in theory continue indefinitely. Right now, we have too much of our resources bound up in our bodies."

He finished flatly, "We stay up here, and starve, or we stay up here and eat each other till the population drops, or we land. Which is it to be?"

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We stay up here and go mad, he thought. *At least, I'll go mad if I stay here any longer.*

He paced restlessly up and down the office; there was nowhere else for him to go. All the earthborn had been confined to their quarters, efficiently, without fuss, but without mercy.

Three days' reserves wasted, he thought; he could almost taste the foulness starting to taint the air, feel the slow drain of their last resources—

The door opened, and he whirled to face it. Two stern-faced tripborn stood in the gap.

"Come with us," said the first, and he numbly obeyed.

They led him down the corridors, guessing about his destination. Not ship admin; not navigation—they passed the entrances to those. In the end there was only one possibility left.

They brought him into the psychological section, and a sunken-cheeked Tsien looked wearily up from his desk. The only other persons in the room were Hattus and Quentin Hatcher; the tripborn looked—frightened.

"So you're still sane, Franz," said Hattus with charnel humor, and Yerring stiffened.

"What's been going on?" he demanded. "I've been locked in my room these past three days—"

"George, and you, and I," said Tsien flatly, "are the only three sane earthborn left in the ship. Everyone else has gone into fugue—Magda, Siv, Lola, Phil, every last one."

"But—why?"

Tsien slammed his hand down on his desk. "Because they have been faced with an intolerable decision! They have to plant the colony, and they've been forbidden to, and there's nothing they can do about it!"

"Why can't they accept that it must be so?" Hatcher put in, and Tsien gave him a sour stare.

"That's what I want to find out. Franz, when you received the sealed orders detailing the compulsions we had to instil in the tripborn, how did you feel?"

Yerring remembered clearly. "I felt extra determination to see things through."

Tsien gestured to Hattus, and the admin officer thrust a piece of paper under Yerring's eyes; it was folded so that he could see only one line of it, but that line—

He had to see that the colony succeeded, but the tripborn refused to land. Consequence: failure. If they didn't land, they starved. Consequence: death—

It was suddenly overwhelming, terrifying. He cried out, feeling a weight of black despair loom up in his brain. The prick of the needle in his arm scarcely produced even a reflex withdrawal; his mind was running around a closed system. Closed system—starve—

Slowly, his eyes focused, and he was looking at Tsien's anxious face. "Are you all right?" the psycholo-

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gist asked. Weakly, Yerring nodded.

"What—?"

"A shot of a euphoric. It'll hold you for the time being, until we can cure you. This settles it, you know."

"Am I ill?" Yerring was confused. "What of?"

"A form of contagious madness." Hattus was grim, but seemed to gain melancholy pleasure from the words. "You caught it the same way I did. From Yoseida."

"You thought you volunteered for this trip, didn't you?" said Tsien. "Well, you didn't. None of us did. You reacted when I showed you Yoseida's signature just now, because it was the trigger of an ordinary post-hypnotic compulsion. Every earthborn in the crew had that compulsion."

Watching his face, Yerring believed the incredible. So Yoseida, the visionary, the dreamer, turned out to be a megalomaniac who wanted nothing less than a planet as tribute to his mania. . . .

"Why have we three got away so far?" he demanded.

"You, I suspect, because you had a sane reason for demanding a landing," said Tsien. "The others hadn't. You were arguing from a viewpoint of simple self-preservation. George seems to have got away because his concern is shipside; the matter of the colony is incidental to him, and no major worry. And I"—he shrugged—"maybe I subconsciously diagnosed Yoseida's condition, and it led me to suspect the trouble could be put right."

So I gave my life for nothing, Yerring thought. He waited for despair, and oddly it did not come.

"We still"—Hattus broke the silence—"haven't solved anything."

The three earthborn turned slowly to look at Hatcher, who trembled under their gaze. "Yes," said Yerring, remembering. "Do we suffocate, or turn cannibal, or land?"

Hatcher's face wrinkled, and he burst quite unexpectedly into tears.

They sat in amazement and watched him. "Is this the way the greatest feat in history must end?" said Hattus in a hushed voice. "A shipload of catatonics to carry the race of man to the stars?"

"If our inescapable compulsion is hypnotic," Yerring demanded of Tsien, "what's theirs?"

Hatcher got blindly to his feet and ran from the room. "He'll recover without difficulty," Tsien said without sympathy. "They brought Felipe back, you know? By remote control. He got over a shock which would have scarred you or me mentally for life in less than a day. Oh, their compulsion?" He spread his hands. "Lifelong, Franz. Total."

"How long will it take to cure the rest of us?" George asked.

"Days, at least, maybe months. We shall have to dredge through their minds and find out where and when the compulsion was instituted, and then erase it. It'll be a long, slow process."

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"Wouldn't it be quicker to cancel it with a new one?"

Tsien gazed at Yerring. "You have a reason for asking that, haven't you, Franz? What is it?"

"Would an earthborn be able to land on the planet?"

"Damn! Franz, you should have been the psychologist instead of me." Tsien's mind was a step ahead of his tongue—the words tumbled over one another. "Convince them the colony is founded?"

"Better. Land them. Land us all—"

"You said that was no answer."

"But it will be! *If we build another ship.*"

Blank faces greeted his words, and he rushed on. "Look, the tripborn will never land. I've worked all this out in the past few days—how long they could last without the earthborn—but the new ship just hit me. Cutting the population by two-fifty would give a margin of perhaps five years, supplemented by material shipped up to orbit. At the end of those five years, they have assembled, in orbit, a new ship—"

"Impossible," said Hattus. "It took ten years to build this one, with all the resources of Earth behind us."

"George, that was thirty-seven years ago," said Yerring soberly. "There has been progress. With the materials on hand—the tools we were going to use to build a modern town for ten thousand, remember!—we can build that ship."

The sincerity in his tone struck through Hattus's apathy, and the admin officer nodded, hope dawning on his face. "And we go back to Earth," he said softly.

Yes, that's one thing the tripborn have lost, Yerring thought. *The looking forward to going home. Because they are home already. Anywhere. Anywhere else.*

"It's a solution," frowned Tsien. "Yes, the earthborn can be cured if they're landed; the tripborn live in space and assemble the ship; when it's over—where do they go?"

"Anywhere."

"But why?" Hattus turned pleading eyes to Yerring. "Why does it have to end like this—in this untidy, empty way?"

"I don't know," said Yerring steadily. *Once there was a sea. . . .* "But I can guess.

"Tsien said that any normal human beings would have succumbed to his conditioning to planetside life. The tripborn didn't. And I think the answer is this: they aren't human.

"They didn't need to plan and plot to mutiny against us—they *did* it, by common decision. George, you had your finger on the pulse of the ship; conspiracy could never have escaped you. And you've noticed that they scarcely talk, except to us, but the ship has run smoothly nonetheless. They aren't human any more. They're—crew."

"So this is the end of humanity," said Hattus softly, and Yerring shook his head vigorously.

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"Never! George, long ago on Earth the sea was the only habitat of life—as it is today on that world down there. But the sea grew crowded; certain species were forced into the shallows, and sometimes the shallows dried up. So some of the creatures learned to take the sea with them, as we brought the air of Earth in this ship.

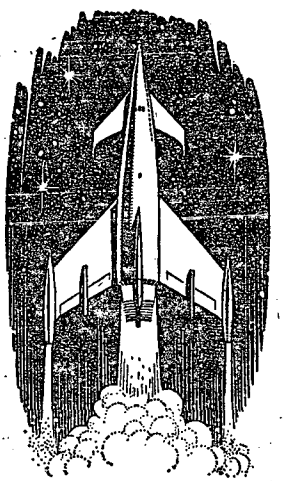
"The blood in your body now is precisely as salty as was that long-ago sea. Of course, for a long time the animals had to come back to the water to breed.

"But—one day—an animal left the water and never came back.

"This isn't the end of man; there are still snakes and birds and dogs on Earth, still amphibians which have to return to the water. We're the amphibians, you and I. For a long time we've had to return to our rock pools, our planetary bases, at frequent intervals. But the ship we build here need never do so. We have found out how to breed now. And after that, there will be a snake, and a bird, and a dog—"

"And in the end," said Yerring slowly, "there will be a man."

NEXT MONTH—



Lester Del Rey discusses the Earth Satellite in his dramatic article, BEHIND THE SPUTNIK

Nelson Bond tells about a man who saw a UFO in his short-short, CASE HISTORY

Stanton Coblentz reports on an odd experiment in his story MICROCOSM

Lloyd Biggle tells the story of a dreamer in his story JUDGMENT DAY

CSI discuss strange falls of ice in their monthly column SHAPES IN THE SKY

William F. Nolan tells about a persistent old woman in his fantastic story, FULL QUOTA

and

James E. Gunn reports on a fantastic alien invasion in his new novel, DEADLY SILENCE

—in *FANTASTIC UNIVERSE*

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command performance

by . . . Donald Keith

It is one thing to remember the trivia of past lives. It is another to be a prisoner in a frightening Tomorrow.

THE *house, in the early dawn, was frighteningly still. Mrs. Georgina Hemingford timidly closed her bedroom door and started down the hall. After the last ten days of horror, she was no longer the haughty social leader the fashionable world envied. Only a terrified old woman, she peered fearfully into the quiet breakfast room.*

There was no sign of that horrible man, or of the two gangsters who had been with him all day yesterday. Nothing but that ominous silence. A white envelope lay alone on the empty expanse of the table. Her heart beat wildly as she hesitatingly edged toward it, expecting at any moment to be startled by a harsh command from her ruthless guest. But there was not a sound. Her name was on the envelope, and she finally tore it open and started to read:—

Most Gracious Lady, *(it began)*

When this shall reach thy eyes, I shall be far hence. I hope to be fortunately repealed to my own time and land, but if not I will have been dispatched to the country of perpetual night. In either case, I will not trouble thee more.

This will not sorrow thee, I trow

One minute this man was in the London of Queen Elizabeth, and the next he found himself trapped in a fantastic situation—more than three hundred and fifty years later—facing death unless he could convince these strange people that he was not the man whom they had been hunting.

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indeed, but mine own honor compels me that I should leave in thy hands this record of the bewildering truth, and also my own most profound apologies.

On that summer evening but ten days agone, thou wast glorying in a most foolish social triumph. Thou didst exult that thy dinner guest was Max Gutzman, that powerful but infamously notorious man. On that same night I was a player in London City, in the company of My Lord Strange. But mark this, for 'tis the heart of the matter—thou wert here in the year of Our Lord 1957, and I was in London in the year of Grace 1590. How this can be passeth my understanding, but so it was.

In my sleep I did hear English speech, but queerly clipt. A command, voiced with authority, bid me, "Wake up!"

Awake I did, and found myself in a great soft chair in this thy house. But not in my proper person. I was in a shape and semblance strange and horrible. I was in a gross body, soft of muscle, with heavy paunch and drooping jowls. The room was filled with a gay company, uncouthly dressed, and all with eyes turned on me with keen interest and amusement.

It was thy voice, dear lady, that first addressed me. "You're an old dear, Mr. Gutzman," you said with effusive coyness. "It was perfectly darling of you to offer to act as the subject of this thrilling demonstration!"

I stared about me in wonderment and alarm, and before I could speak a tall dour man—you told me afterwards he was a Doctor Frankel—claimed thy attention. "I must be running along now," he said. "Max, here, is still a little confused, but he'll be all right in a minute. I'm late now for another appointment," and he left most precipitously.

The other guests crowded about me then, all calling me by the name of Gutzman, and I have been called Gutzman from that day thence, despite my first disclaimers.

Methought at first 'twas witchcraft, and small wonder. Thy house is indeed a faerey place. I have since become accustomed to its marvels, the lighting at night without candle or torch, that strange device the telephone, and the living pictures you speak of as television, but my wonder still remains. That night I thought it all a magic spell, and in the desperate hope that it would pass I held my tongue. To all that was said to me I stood silent, both because I lacked then the wit to understand thy strange speech and because sheer terror struck me dumb.

It was assumed by thy guests, and by thyself, that a sudden illness had befallen me, but none doubted that I was indeed Max Gutzman. That worthy little man thy husband did put me to bed in thy house, and a physician was sent for.

In converse with the physician and with thy husband it became

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most clear to me that this around me was no vapor of the mind, but solid reality. They would have it that I was Max Gutzman, but that my mind was sore deranged, and I could not read reason into them. They talked of having me confined until my mind should clear, so I saw no choice.

Sith I must either be clapped in bonds as a madman or be Max Gutzman, I made resolve to master my own fate. I am no desperate Dick by nature, but none have ever said that I cannot act. To play a part is well within my powers, and this clearly was a "command performance." The part required me to be Max Gutzman, so forsooth Max Gutzman would I be.

Ere the physician left I had him well persuaded that I knew myself to be this Gutzman, and that my only ill was a lapse of memory as to recent events. This he thought would pass, and he urged me to agree to talk with a man, Otto by name, who waited impatiently to speak with me. This Otto seemed, by his own account, to be a hireling of Gutzman's, who said he must see me on the instant. I agreed, trusting to my native wit to read my lines trippingly. From their manner it appeared that Gutzman was a man to be feared, and of few words, and I took my cue from that.

The man Otto was a burly varlet, thin-lipped and with no more expression than a dead cod. He looked at me sharply through slitted eyes as he made entrance to the bedroom, and I returned his gaze as sharply.

"Is that straight, chief, that you don't remember nothing?" quoth he, like a conspirator, scarce moving his lips.

His speech was in such strange jargon that I dared not reply if I were to keep him deceived. I caught his meaning, however, and so shook my head in denial, meantime looking toward the door as though fearing eavesdroppers.

He took the cue, and dropped his voice. "Good," said he. "Just an act, eh?"

I nodded, and he sat down quickly, bringing his mouth close to my ear. "It's bad news, chief," he whispered. "They've found the body."

"Found the body?" I repeated, parroting his own words carefully.

"Now don't get sore," he rushed on. "After you plugged Foley we got his body into the car, to dump it in the river like you ordered, but some of Foley's boys was wise. They followed us in a car, and rammed us before we got to the docks. Our boys had to scram and fast. We didn't have time to do nothing about the body. Red says you knew about it—but I guess not, eh?"

I shook my head, deeming it wisdom still to leash my tongue. But I looked at him dourly, and he cringed.

"Now wait, chief," the knave whined, recoiling from my bedside. "Don't get the wrong idea. We didn't have a chance. They had a

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whole carful of hoods, and they was right on our tails." He backed to the door as though he feared I would attack him from where I lay. "You hide out here, and we'll wipe out the whole gang."

I waved the fellow out with a fierce glare, dissembling fierce anger, but 'twas clear to me that I could not sustain the part long when it came time for speaking. This Gutzman plainly was a man feared by his enemies and his followers alike. But 'twould take a nimbler tongue than mine to mouth his language, and so to command his followers.

The matter called for thought, and thought I gave it.

As I made shift to cull out the sense of the coil, methought the pattern stood out plain, thus:

Item: I was imprisoned in the gross physical body of Max Gutzman.

Item: Gutzman had that day killed a powerful enemy.

Item: The murder was known, and Gutzman was now in danger for his own life. Nay, I, in Gutzman's form, was in danger for *my* life.

Item: Gutzman's hiding place, in thy house, gracious lady, was not known to his enemies. For the nonce, it was a sanctuary where I might lie safe.

From such thinking, my course lay plainly marked. I must remain within thy house, and to enforce my need I must continue to act the part of Gutzman with thee and thy husband, fiercely and without ruth as he himself would have done.

You will remember how next morning I questioned thee, to learn how I had come to be here, making my "lost memory" my excuse. I learned then, from thy naive presentment, of the social rivalry to secure prominent or notorious men as guests at your dinners. Gutzman was such a man, and you felt most triumphant when he consented to accept thy invitation. Then, on questioning further, I learned of the guest whom Gutzman had brought, unbidden, with him to thy banquet. This Doctor Frankel, with his strange power you call hypnotism, must have been a startling addition to the company.

I do confess that I listened with suspicious disbelief to thy tale of his strange powers. That he should cast divers of thy guests into a deep sleep to amuse the company was not, itself, so wondrous. We have witches in England could do as much, though to do it would risk their lives, since we like not witchcraft. 'Twas passing strange, though, that Max Gutzman should offer himself as a victim to such spells. 'Twas out of character for such as he. Harder still was it to credit thy tale that in his sleep he did revisit not only events of his childhood, but also of other lives on earth before his birth as Max Gutzman.

But passing all belief as it was, I must credit the ending of the tale. When you told me of Frankel's

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command to his subject to "wake up," and of how upon awakening he seemed confused and without any memory of how he came there, it bore the ring of truth. 'Twas I who awoke, and suffered the confusion. Truly, there are more things in heaven and earth than I had dreamed of in my philosophy. I did accept thy account, and began then to smell some inkling of my plight.

After I had wrung thee dry, thou didst delicately hint that I might now begone. 'Twas then I caused thee such distress by my swashing and ruffling. Refusing with bold fierceness to leave thy house, and demanding both that you keep me safely hidden and that you refuse all other visitors, I played the villain to the hilt. I deplore it, Gracious Lady, but my need brooked no other course.

I wot not thy condition or estate, but methinks thou art a Duchess at very least. At first thou didst carry thyself with the haughtiness of a Queen, but such was the appearance of wrath I did put on that even thou didst quail.

I fear me that you found care an enemy to life in the days that followed. If it be any comfort to thee, so also did I. Not only did I live in fear of death from unknown enemies, but I was in despair at facing life, bound as I was in this loathesome body. How to escape that vile imprisonment I knew not, how to escape Gutzman's vengeful enemies was equally a riddle, and 'twas most clear I could not hold thee in terrorized subjection forever.

I know not how the sorry coil might have been resolved had we been left undisturbed. Well for thee, at least, 'twas not to be. Three troubled days later it was, that the bell rang on that wondrous engine that thou call'st a telephone. Fear was writ plain on thy face as thou whispered, "It's for you," and placed the queer thing in my hand.

I sensed disaster, but must needs face up to it. Holding the instrument to my ear, I answered boldly to my cue.

"Hi, Maxie boy," a voice crackled in my ear. "Just thought I'd let you know we've put the finger on you. This is Johnny Shapper, and I'm taking the racket over now Foley's wiped out. Got any objections?"

"No. No objections," said I, though his words meant little to me.

There was a long silence, and then a spate of savage words. "So. Going to be that way, are you? Maybe you think I can't do it. I got news for you. Your whole mob's wiped out, see. You got nobody, what I mean. Nobody. Why don't you wise up and make a deal?"

"A deal?" quoth I after him, well knowing I could not risk longer speech and still maintain my part as Gutzman.

"Sure. Why not?" Of a sudden the voice was fair honeyed, and dripped with guile. "You've got the D.A. on your payroll. We'll let

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the gang think you're out of the racket altogether, and I'll give you a cut under the table. Meet me at Dutch Eddie's in half an hour and we'll work it out."

His chatter made but little sense to me. The bit anent a cut under the table I took for a threat, and I know not what a D.A. can be. But I saw the trap in the challenge to meet him outside the safety of these walls. "A pretty plan," quoth I, and with a harsh laugh I replaced the instrument upon its cradle. They must think Max Gutzman dull indeed, to be cozened from his fastness like a mouse with a bit of cheese.

And yet, methought, with my hiding place now disclosed, thy house was safe for me no longer. To swagger and roar without e'en a poniard at my belt would be of little avail should they come in force to take me. With no spot else where safety might be found, I must make shift as best I could. Only guile would serve, and 'twas then I called thy husband to my counsel.

Laying off my part of ranting bully, to him I told my tale in all humility. Thy worthy man is no goose-witted fool. Truly he is a scholar, and knows much of England under good Queen Bess. He did put me to the question like a very man of law and in the end, though marveling, he gave me credence.

Gray mouse of a man though he be, he has good wit. As we conspired together I conceived a plan to use a device he owned and he did tell me of. It is a wondrous device he calleth a tape-recorder, which parrots back each word one speaks before it.

Being a player, I am well schooled to speak in diverse voices. He taught me lines to speak, reading over every sentence time upon time until I had the accent perfect. So did we lay a plot, as thou wilt see.

That same night, as I sought my bed, I found two strapping rogues waiting in the darkness of the room. One seized me from behind the while the other closed the door and pressed the lever on the wall which fills the room with light. He then faced me with a small but deadly looking weapon which I took to be some sort of hand-gun.

"Frisk him," commanded the man with the gun, and the other prodded me roughly in many parts of my body. I wot not what his purpose was, since the pummeling was too light even to bruise, but he seemed in deadly earnest. When he had done, he stated with an oath that I was "clean." I played my part as written in the script and offered no resistance.

"O.K. Johnny," called the first rogue in a low voice, and a man entered through my window, which I saw was open. He, it quickly did appear, was that same Johnny Shapper whose voice had spoken on thy telephone that morning.

He was a swarthy knave, short;

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but broad of shoulder, and he too carried a small hand-gun in his clenched fist. He looked sharply around the room and then with squinting eyes at my five-day beard. "Hi, Max!" quote he with an evil smile, and strutting like a game-cock. "So you don't even carry a rod, eh? Thought I wouldn't have what it takes to come after you, I suppose. You don't know Johnny Shapper."

I shrugged. "D'ye think me a magician, to need a rod?" said I quietly. "Speak thy piece, and have done."

The first knave snarled and raised his weapon. "Shall I plug him here?" he cried.

"Don't get trigger-happy, you fool," the fellow Johnny commanded. "D'ye want these snoopy neighbors calling in the cops to see what the gun-play's all about? Maxie will be glad to go for a ride with us, to a nice quiet place, won't you, Maxie boy? And there won't be any lead-filled corpse for his friend the D.A. to get excited about. Out that window, Max, and no tricks."

"I think not," said I boldly, facing toward the door of the bathing-room, "Come in, boys."

It was the cue for that worthy man, thy husband, and he did not fail me. Having listened outside the bedroom, he had entered the bathing-room by its other door and stood ready with the tape-recorder.

As the rogues looked at me in startled surprise, the door swung open and from its darkened depths a harsh voice called out. "Drop your guns and reach for the ceiling!" Immediately a second voice cried, "We got you covered. Make it snappy!" and a third, "We ain't fooling! Drop them guns!"

The voices all were mine, but so disguised that 'twas impressive e'en to me. The frightened rogues let fall their weapons as though palsied, and the voice from beyond the door commanded, "Now, turn around and walk over to the wall —and slow, if you don't want a slug in your back."

The sweating faces of the three rogues were turned ashen gray, and with arms upraised they turned their backs without a word. I gathered up their fallen weapons and slighted them into the basket 'neath the table. Then took I the rapier from the brackets on the wall, where we'd hung it but that afternoon, and bid them face me.

Like all players, I am well schooled in the fencing art. With a natural weapon in my hand I felt my own man again, and fearfully did they shrink back as I made passes at their eyes and throats. The play was over, though I still wore the foul semblance of Max Gutzman, but I spoke them in my own tongue.

"Hark'e well," said I. "I have no wish to harm thee, but I have the will if need be. Know ye, first, that I am not Max Gutzman, but a stage-player, playing a part much against my own desire."

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The rogue Johnny started forward fiercely, but fell back quickly as my point pricked his throat. "You mean to say you're a ringer, and that Max's got away," said he, staring at me through half closed lids like a frightened fox-dog from its hole.

"He's Max, all right," said one of the varlets sullenly. "He just needs a shave—he's gone nuts."

But their cowed leader shook his head in doubt. "You look like Gutzman all right, but it could be," said he, "Max could hire a double to front for him." I took courage to stake my biggest throw, for where might I ever get another hearing?

"I must a tale unfold that passeth all belief," said I. "Sit thee down, all three, and hearken well. Mayhap 'twill not strike thee so strangely, since I have seen much here also that passes credence, but hear me out ye must."

"Why not?" saith Johnny, and the three sat themselves in a row, still faced by my threatening blade, whilest I began my tale.

"Max Gutzman has in his following a Doctor Frankel," said I. "A man with powers strange and wonderful to me, but not unknown to thee, methinks. Dost know the man?"

"The only Frankel I ever heard of is that guy on TV, and he wouldn't be in Gutzman's mob," he told me. "This guy's a hynotist. Put's a stooge to sleep and makes him remember stuff that happened before he was born. He's got quite a racket."

"That is the man himself," said I. "And make no mistake, he is indeed in Gutzman's pay. Upon the night that he killed Foley and came thence to this house, he brought this Doctor Frankel with him."

Johnny Shapper looked in query at his two comrades, a scowl upon his swarthy face. "I don't get it," said he. "He came here to hide out from us, sure. But what's Frankel got to do with it?"

"He is the very nub of the coil," I did assure him most earnestly. "Thou say'st Frankel makes a man to remember, but not so. 'Tis not the memory, but his spirit, the very man himself, that goes forth aquesting in the past on Frankel's orders. Under his spell Max Gutzman left this human frame behind, and to escape from thee found safety in a time four hundred years agone."

"Now wait a minute," this Johnny said, fixing me with a basilisky stare. "Are you trying to tell me that Gutzman had Frankel hypnotize him and send him back four hundred years without no body? That don't make sense. How could he live back there without a body? And what happened to the body he left behind?"

"'Twas this body he left behind," said I, tapping my chest. "This body, which imprisons me."

"Oh, yeh?" quote he with a sneer. "And who in hell are you?"

"Nay," I shook my head. "I be

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no demon from hell, but an innocent man whose body Gutzman has wickedly stolen from me."

"You're nuts," he growled at me, but with a look of doubt none the less.

"You know, Johnny, maybe the guy's got something," spoke up one of his comrades. "I thought you was nuts yourself when you said this guy was a ringer, because he sure looked like Gutzman, even to the scar on his ear. But he don't act like Gutzman, and the more he talks the more I can see you was right. What I mean, he looks exactly like Gutzman, but he ain't Gutzman. And Frankel can sure do some funny stuff, if you ever watch his show."

"But I tell you it ain't possible," said Johnny. "Suppose Gutzman did go back four hundred years. He'd be there without a body, and how would he get into the body of some other jerk. He wouldn't know how to do that anymore than I would."

"Ay, but this Doctor Frankel does know," I reminded him. "Gutzman was under Frankel's spell, and taking orders from him. 'Tis well known that when a man sleeps his soul leaves his body and roams afield, and 'twas in my sleep he came upon me. By Frankel's devilish art he was enabled to usurp my bodily frame while I, with nowhere else to go, perforce must take his place in this."

Confusion and suspicion were writ large upon the rogue's scowling face as he stared at me the space of a full minute. He broke it with a shrug. "O.K.," said he, "if Max is four hundred years away, he won't be making any trouble here. Maybe the mob will knock you off, just to play safe, but we're sitting pretty. Let's get going."

"Not so," said I. "Still goest thou too fast. Bethink thee. Frankel has but to send another man questing in the past under his spells, and he can call Gutzman back still to oppose thee. And this time he would be in a human frame thou wot'st not of. He can return in the body of a man of wealth and power, or e'en that of a woman, for aught we can know."

This brought him pause. Once more he faced me with scowling mien, and confusion more confounded.

"Yeh, I guess that's right," he muttered. "So what? I suppose you've got a better idea."

"Certes," I assured him. "If ye fear Gutzman, as I see ye do, why leave his return unhampered in the hands of Doctor Frankel. Require him to recall your enemy before thy eyes, and within reach of thy hands. Recall him to this body, and return me to my own land and time."

Johnny nodded, squinting his eyes in thought. "Not bad! Not bad!" he cried. "You're a pretty smart cookie. We could snatch Frankel easy enough, and he could hypnotize you, eh? But it don't need to be you. We could pick any stooge

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to go back, and you could stay here. I'd take you into my mob."

"Heaven forfend," I cried in horror.

"What's the matter?" said he. "Don't you like it here?"

"Not I," said I most fervently. "This time may suit thee, but I'll choose merry England and the rule of good Queen Bess. This soft and paunchy body befits not a man. Let me sit down again to a haunch of English beef or venison, and a mug of stout ale, in a time when a man carried a sword and poniard and could defend his own honor if need be. Nay, keep this thy time, but I'll none of it."

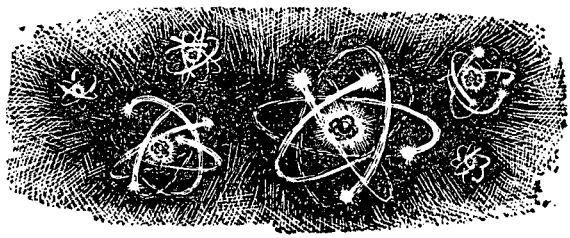
And so it was arranged. I noted thy surprise, dear Lady, when I brought in the other two rogues for the morning meal, and I did deplore the necessity for thy sake, though I did dissemble to be ruthless before thee. This Johnny would not leave me except the other two should stay to watch my further actions, and for this I blame him not. He too is dealing with forces beyond his ken, and he must needs use caution. But tonight thy trials end.

Whate'er the outcome, tonight this body will lie cold in death, I feel assured. Methinks 'twill never be discovered, but Max Gutzman will disappear into the limbo of forgotten men. I am to go with the two varlets who guard me to a rendezvous where Johnny will be waiting, with the captive Doctor Frankel, and there submit myself to his spell.

Whether it will be I or Max Gutzman which occupies this body when Frankel commands "Awake," I know not. Whichever 'tis, I doubt not the awakening will be but sudden death. If it be I, there is naught can save me. There is a destiny which shapes our ends, roughhew them how we will. But I have hope.

There is little chance, Gracious Lady, that thou wilt ever hear of a player and a writer of plays who lived and died four hundred years before thy time, but if I do return home I think my own generation will perhaps come to know my name as thou dost that of Ronald Colman, Gary Cooper, and thine own favorite Elvis Presley. It is with most profound apologies for the terror and humiliation I have caused thee, Gracious Lady, that I say farewell, and sign this with my own name.

Will Shaxpere.



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the bounty hunter

by . . . Avram Davidson

They were out there to see how these hunters maintained the free and rugged traditions of the home planet.

THERE was a whirring noise and a flurry and part of the snow-bank shot up at a 45-degree angle—or so it seemed—and vanished in the soft gray sky. Orel stopped and put out his arm, blocking his uncle's way.

"It's a bird . . . only a bird . . . *get* on, now, Orel," Councillor Garth said, testily. He gave his nephew a light shove. "They turn white in the winter-time. Or their feathers do. Anyway, that's what Trapper says."

They plodded ahead, Orel, partly distracted by the pleasure of seeing his breath, laughed a bit. "A bird outside of a cage. . . ." The councillor let him get a few feet ahead, then he awkwardly compressed a handful of snow and tossed it at his nephew's face when he turned it back. The first startled cry gave way to laughter. And so they came to the trapper's door.

The old fellow peered at them, but it was only a thing he did because it was expected of him; there was nothing wrong with his eyes. Garth had known him for many years, and he was still not sure how many of his mannerisms were real, how many put on. Or for that mat-

Avram Davidson is one of the most interesting and varied writing talents we've encountered in some time. He has rapidly attained prominence with his sensitive portraits of a very human and credible Tomorrow, such as here where latter-day bounty hunters face the problems brought by Civilization.

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ter, how much of the antique stuff cluttering up the cabin was actually part of the trapper's life, and how much only there for show. Not that he cared: the trapper's job was as much to be quaint and amusing as to do anything else.

Orel, even before the introductions were over, noticed the cup and saucer on the top shelf of the cabinet, but not till his two elders paused did he comment, "Look, Uncle: earthenware!"

"You've got a sharp eye, young fellow," the trapper said, approvingly. "Yes, it's real pottery. Brought over by my who knows how many times removed grandfather from the home planet. . . . Yes, my family, they were pretty important people on the home planet," he added, inconsequentially. He stood silent for a moment, warmed with pride, then made a series of amiable noises in his throat.

"Well, I'm glad to meet you, young fellow. Knew your uncle before he was councillor, before you were born." He went to the tiny window, touched the defroster, looked out. "Yes, your machine is safe enough." He turned around. "I'll get the fire started, if there's no objections? And put some meat on to grill? Hm?"

The councillor nodded with slow satisfaction; Orel grinned widely.

The trapper turned off the heating unit and set the fire going. The three men gazed into the flames. The meat turned slowly on the jack. Orel tried to analyze the unfamiliar smells crowding around him—the wood itself, and the fire: no, fire had no smell, it was *smoke*; the meat, the furs and hides . . . he couldn't even imagine what they all were. It was different from the cities, that was sure. He turned to ask something, but his uncle Garth and Trapper weren't attending. Then he heard it—a long, drawn-out, faraway sort of noise. Then the trapper grunted and spit in the fire.

"What was it?" Orel asked.

The old fellow smiled. "Never heard it before? Not even recorded, in a nature studies course? That's one of the big varmints—the kind your uncle and the other big sportsmen come out here to hunt—in season—the kind I trap in any season." Abruptly, he turned to Councillor Garth. "No talk of their dropping the bounty, is there?" Smilingly, the councillor shook his head. Reassured, the trapper turned his attention to the meat, poked it with a long-pronged fork.

Orel compared the interior of the cabin to pictures and 3-D plays he had observed. Things looked familiar, but less—smooth, if that was the word. There was more disorder, an absence of symmetry. Hides and pelts—not too well cured, if the smell was evidence—were scattered all around, not neatly tacked up or laid in neat heaps. Traps and parts of traps sat where

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the old man had evidently last worked at mending them.

"Council's not in session, I take it?" the trapper asked. Orel's uncle shook his head. "But—don't tell me school's out, too? Thought they learned right through the winter."

Garth said, "I was able to persuade the Dean that our little trip was a genuine—if small—field expedition—and that Orel's absence wouldn't break the pattern of learning."

The trapper grunted. *Pattern!* Orel thought. The mention of the word annoyed him. Everything was part of a pattern: Pattern of learning, pattern of earning, pattern of pleasure. . . . Life in the city went by patterns, deviations were few; people didn't even *want* to break the patterns. They were afraid to.

But it was obvious that the trapper didn't live by patterns. This . . . disorder.

"Do you have any children, Trapper?" he asked. The old man said he didn't. "Then who will carry on your work?"

The trapper waved his hand to the west. "Fellow in the next valley has two sons. When I get too old —a long time from now," he said, defiantly; "—one of them will move in with me. Help me out. Split the bounties with me.

"I was married once." He gazed into the fire. "City woman. She couldn't get used to it out here. The solitude. The dangers. So we moved to the cities. *I* never got used to *that*. Got to get up at a certain time. Got to do everything a certain way. Everything has to be put in its place, neatly. All the people would look at you otherwise. Breaking the patterns? They didn't like it. Well, she died. And I moved back here as fast as I could get the permission. And here I've stayed."

He took down plates, forks, knives, carved the meat. They ate with relish.

"Tastes better than something out of a factory lab, doesn't it?"

Orel's mind at once supplied him with an answer: that synthetics were seven times more nutritious than the foods they imitated. But his mouth was full and besides, it *did* taste better. Much better. . . . After the meal there was a sort of lull. The trapper looked at Councillor Garth in an expectant sort of way. The councillor smiled. He reached over into the pocket of his hunting jacket and took out a flask. Orel, as he smelled it (even before: after all, everyone knew that the bounty-hunters drank — the flask was part of every 3-D play about them), framed a polite refusal. But none was offered him.

"The purpose of this two-man field expedition," his uncle said, after wiping his mouth, "is to prepare a term paper for Orel's school showing how, in the disciplined present, the bounty-hunters maintain the free and rugged traditions of the past, on the Home Planet

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. . . let me have another go at the flask, Trapper."

Orel watched, somewhat disturbed. Surely his uncle knew how unhealthy. . . .

"My family, they were pretty important people back on the Home Planet." The Old Trapper, having had another drink, began to repeat himself. Outside—the dusk had begun to set in—that wild, rather frightening, sound came again. The old man put the flask down. "Coming nearer," he said, as if to himself. He got to his feet, took up his weapon. "I won't be gone long . . . they don't generally come so near . . . but it's been a hard winter. This one sounds kind of hungry. But don't you be frightened, young fellow," he said to Orel, from the door; "there's no chance of it's eating *me*."

"Uncle . . ." Orel said, after a while. The councillor looked up. "Don't be offended, but . . . does it ever strike you that we lead rather useless lives in the city—compared, I mean, to *him*?"

The councillor smiled. "Oh, come now. Next you'll be wanting to run away and join the fun. Because that's all it is, really: fun. These beasts—the big varmints,' as he calls them—are no menace to us any longer. Haven't been since we switched from meat to synthetics. So it's not a truly useful life the old man leads. It's only our traditional reluctance to admit things have changed which keeps us paying the bounty. . . ." He got up and walked a few steps, stretched.

"We *could* get rid of these creatures once and for all, do it in one season's campaign. Drop poisoned bait every acre through the whole range. Wipe them out."

Orel, puzzled, asked why they didn't.

"And I'll tell you something else—but don't put it in your report. The old fellow, like all the trappers, sometimes cheats. He often releases females and cubs. He takes no chance of having his valley trapped out. 'Why don't we?' you ask—why don't we get rid of the beasts once and for all, instead of paying bounties year after year? Well, the present cost is small. And as for getting an appropriation for an all-out campaign—who'd vote for it? *I* wouldn't.

"No more hunting—no more 3-D plays about the exciting life in the wild country—no more trappers—why, it would just about take what spirit is left away from us. And we are dispirited enough—tired enough—as it is."

Orel frowned. "But why are we like that? We weren't always. A tired people could never have moved here from the Home Planet, could never have conquered this one. Why are we so—so played out?"

The councillor shrugged. "Do you realize what a tremendous effort it was to move such a mass of people such a distance? The

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further effort required to subdue a wild, new world? The terrible cost of the struggle against colonialism—and finally, the Civil Wars? We don't even like to think about it—we create our myths instead out of the life out here in the wilds—and all the time, we retreated farther and farther, back into our cities. We are tired. We've spent our energies, we've mortgaged them, in fact. We eat synthetics because it's easier, not because it's healthier."

A gust of cold wind blew in on them. They whirled around. The Old Trapper came in, dragging his kill by the forelimbs. He closed the door. The two city folk came up close. The beast was a huge male, gaunt from the poor hunting which winter meant to the wild creatures.

"See here—" the trapper pointed. "Lost two toes there. *Old* wound. Must've gnawed his way out of a trap one time. *There*—got *these* scars battling over a mate, I suppose. This *here's* a burn. Bad one. When was the last big forest fire we had?—one too big to outrun—" He figured with moving lips. "*That* long ago? How the time does pass. . . . Let me have that knife there, young fellow—" Orel glanced around, located the knife, handed it to him; gazed down in fascination and revulsion. The wild life did not seem so attractive at this moment.

"Watch close, now, and I'll show you how to skin and dress a big varmint," the Old Trapper said. He made the initial incision. "Dangerous creatures, but when you know their habits as well as *I* do . . . Can't expect to wipe them out altogether—" He looked at the two guests. Orel wondered how much he knew or guessed of what had been said in his absence. "No. Keep their numbers down, is all you can expect to do." He tugged, grunted. "I *earn* my bounty, I can tell you." He turned the creature on its back.

Orel, struck by something, turned to the councillor.

"You know, Uncle, if this beast were cleaned up and shaved and—" he laughed at the droll fancy—"and dressed in clothes, it—"

Councillor Garth finished the sentence for him. "Would bear a faint, quaint resemblance to *us*? Hm, yes . . . in a way . . . of course, but their external ears and their having only five digits on each—" He clicked his tongue and stepped aside. The Old Trapper, who didn't care how much blood he got on things or people, worked away, but the Councillor took his nephew closer to the fire to finish what he had to say.

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seed

by . . . Theodore Pratt

They'd said that the fallout would harm nobody, and maybe they were right. They did not say what would come to life....

LAST spring was the one during which many atomic shots were fired, causing all the world-wide controversy about the effects of their radiation. I don't know anything, scientifically, about that, but I think I do know something about one possible effect. I doubt if I will live to tell all of it or put down whatever the final conclusion may be, for it looks as if the seeds are going to get in at me. Many millions of them are gathered outside my house, working at a way to come in and kill me. I am putting this account down while I can.

The first thing I noticed was last spring when a mysterious gray ash fell over most of my farm. I could not account for it, and none of my neighbors saw anything of its nature on their places. It was an extremly fine ash, like what I suppose a volcanic one would be. It came down one afternoon, and continued for several hours. It didn't pile up on the ground but disappeared almost as soon as it touched the earth, like a late spring snowfall that melted almost at once on contact with the ground. There was no evidence of it afterward.

I'd better say right now that I am

When Theodore Pratt was in hospital, some time ago, he was startled to find that he was better known to the nurses for stories such as this, than as the author of innumerable plays and books including novels such as the recent and extremely successful GOLDEN SORROW *(Gold Medal, 35¢).*

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what is called a gentleman farmer. Having independent means, I don't farm to live off my crops, but just like to live on a farm, mine being in a remote part of western Pennsylvania. I have not worked it at all, not even having any stock, and I have lived alone without servants after my dear wife died in childbirth six months ago. Since then I've had plenty of time to observe things, which maybe is why I was the only one to notice the ash and perhaps the single person to see what I believe to be its beginning effects.

The significant thing happened yesterday, an early fall day when the maples began to put out their seeds. I'm sure you know what a maple's seed looks like, being two gossamer-like flat wings, attached to a small central core, by which it flutters on the wind to other parts, there to plant itself. Well, when walking along the side of my big open field near the edge of my woods, I saw a maple seed floating down. Only instead of simply riding the light breeze blowing I was surprised to see that its tiny wings seemed to be working, flapping away as if not attached rigidly to their seed, but were movable.

At first I was sure it must be a broken one, worked by the breeze in such a way that it created this illusion. The seed fluttered about for a time and then disappeared into the woods in the direction of a ravine on my property; I didn't see it land anywhere, having the impression that it did not come to rest.

I stood there for a time, staring, and still not accepting what I thought I had seen. Then another seed came down; in fact, two were dropped by a high maple at about the same instant. Now I saw that there was no doubt of it.

Instead of being merely able to float on the wind the wings of the seeds definitely flapped, like those of a bird.

The seeds could travel by themselves, choosing their own direction and destination. Both flew off toward the ravine.

To say that I was astounded is to put it mildly. It made me, for the first time since her death, at least momentarily forget my wife.

To be absolutely sure, I stood there, stock still, to watch some more. Another seed came down, repeating the process, and then another, followed steadily by many in an unceasing stream. Each would navigate independently through the air, flying of its own will and accord. Most disappeared in the direction of the ravine.

I thought of the strange ash that had fallen the previous spring and could only assume that it had mutated the seeds, stimulating them to the big evolutionary jump of not only giving them workable wings but some kind of mind or volition or instinct to fly not blindly but with choice. The seeds of life, including those of man, are particularly sensitive to radiation, and this was one dread manifestation of it.

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I stood there for a long time watching the phenomenon. Then it occurred to me to wonder why the seeds were all flying through the woods in the direction of the ravine. Entering the woods myself, I followed under the seeds flying overhead until I came to the edge of the ravine.

It was a very pretty ravine, perhaps a hundred yards long and half that wide, with a sparkling little brook running merrily down its middle. Many plants and flowers, not to say weeds, grew there, and it had been the favorite spot of my wife and myself. I had not been there since she died, for it brought too many memories, and now I had to steel myself to approach it.

When I did, and looked down into it, all thoughts of my wife again left me.

I saw the maple seeds once more. They were gathered, not fallen on the ground, but in the air above the ravine. A cloud of them flew about there, flapping their miniature wings, and being joined by newcomers from all directions.

And that was not all. Not by any means. I saw that when I walked down into the ravine.

I had known that many seeds could move and even travel in ingenious fashion, such as flying on the wind, floating, bursting, rolling, or attaching themselves to movable objects, including animals, or offering themselves as food for birds to be dropped out of their digestive tracts later, but to see not only maple seeds but other kinds which had their own built-in power of locomotion, not dependent on wind, incline, flowing water, or animal, was something else again.

Dandelions were the first I noticed. Usually their fluffy balls waited for a good breeze to break them up and send individual pieces of fluff, with a seed attached, to another spot where it would plant itself, to grow in the following spring and perpetuate its species. Without a breeze it was helpless and could go nowhere, merely dropping on the ground near its plant so thickly in the thousands that most were crowded out and died, causing a prodigious waste.

Now it was different. The air was absolutely still down in the ravine, not a breath moving, when I saw the first bit of fluff, with tiny seed pendulant from it, detach itself from its ball and rise into the air. Another followed, and then all the many thousands of fluffs from hundreds of plants could be seen to rise, filling the air where it was not already occupied by the maple seeds. There were so many of both that they clouded the sky, half shutting out the sun.

Amazed, I stared closely at other plants. I saw that more seeds had, so to speak, also begun to feel their oats, though no oats grew there. One, called the Cat's-claw, because attached to it was a claw resembling that of a cat, had become capable of an extraordinary thing. Previously it had to wait on the stalk and

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branches of its plant, or on the ground if it dropped there, for some animal to come along and touch it so that its claw took hold and it rode off to find a place to grow. Now the Cat's-claw was able to reach out and catch hold of anything that passed, such as my trouser leg.

I noticed that they were capable of even more movement, for they could hunch along the ground under their own power, going where they pleased!

Another seed, commonly called the Sticker, because it was a tiny dart that, on contact, attached itself to animals and even larger traveling seeds, was now able to throw itself at the object on which it desired to travel, shooting through the air like a dart and imbedding itself, to be carried off.

The Stickers seemed to enjoy their new ability, for they had taken to shooting into the air, making little flights, landing in the earth, which they penetrated sometimes up to half their length, and then pulling themselves out, to dart again. They appeared to think this was a great deal of fun, but conditions, I saw, were becoming a little dangerous in the ravine because the Stickers were making erratic flights all over the place. Some of them did not at once become very proficient about controlling the direction they took, with the result that other residents of the ravine were constantly dodging them to save their lives. In several cases the Stickers actually penetrated other seeds, killing them.

The Floaters seemed to be even more delighted when they found out what they could do. These were seeds of plants that grew at the edge of a brook. They were sizeable long seeds that resembled a small boat. When ready to migrate they dropped into the water and floated off, to land on the bank somewhere downstream, often far away, to grow in the spring.

Now, when they dropped into the brook, they floated in regulation fashion, and started to bob off downstream. Then, suddenly, one of them switched about and faced upstream. Instead of being carried down and away it managed to remain in one position, as if treading water. Another followed suit, and then a third. This last one improved on the performance. It began to swim upstream, quite able to steer itself to any place it wanted to go. Not satisfied with that, it approached the bank, clambered out and began making its way, with a sliding motion, on dry land, completely amphibious. His brothers, watching, repeated his action before all took to the water again, cavorting about in enjoyment of their newfound, miraculous abilities.

This power to move of themselves, I learned, as I stared with my mouth dropped open, had been given to virtually all of the seeds. Added to it were particular talents suited to their individual make-ups. One seed, the Squirter, was a wild

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cucumber with the ordinary ability to build up pressure within its long seed pod so that when it broke, at one end, it shot out its hard little pointed seeds to find a good growing place. They were affected with quite an improvement on this. Whereas previously they squirted their seeds haphazardly, unable to aim in any direction and with a firepower distance of only a few feet, now they could choose the place they wanted to land their bullets with unerring accuracy, and their range had been improved to be counted in many yards. I could see that when they landed on a target they penetrated it deeply.

The Exploders were much the same and of even greater lethal potential. Instead of having a long seed pod like the Squirters, the Exploders had a hard round gray pod which was serrated into strips. Previously this pod, while still on its parent plant or dropped to the ground, merely burst with quite a decided bang, throwing its hard round pellet-like black seeds in all directions.

The ash had affected the Exploders in exceptional fashion. They were mutated to the extent that they could now leap from their parent plants or from the ground. They were able to jump some distance, catapulting themselves. And they could explode, as they chose, either in the air or at the spot they landed, at any time they pleased. Additionally, their explosive power had become so great that their detonations were deafening and shook the earth, their seeds shooting out with such grenade-like force that they destroyed everything for some yards about. They had become small but very potent bombs.

A bomb, exploding, had created a bomb.

Of all the ways in which the curious ash affected the seeds of the ravine, however, none was more dramatic than what it did to the Burrs. These were the most profuse residents of the ravine and the least attractive. They were ugly and they didn't care to what they attached themselves, choking and killing their hosts in their own predatory interests. Everything avoided them, for if another so much as touched them the Burrs would engulf it. And they were not easy to avoid, for they were all over the place.

Formerly the Burrs had to be touched by some other thing in order to cling to it. Now it was to be seen that the Burrs had developed a cruel ability. They could move their vicious little brown spines so that they did not have to lay in wait for something to come along, but could move to it. Each of its dozens of spines acted as a leg, permitting it to travel along the ground in any direction it wished.

The only mitigating circumstance was that it could not travel very fast. Each leg had to be put forward, as though thinking out the process with effort and quite a bit of mental torture. The Burr, probably, was not very bright. Still, its

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new-found mobility was a formidable thing. Staring at its operation, as thousands of them moved about, I found it somehow very threatening.

All of this eccentric and abnormal activity of the seeds was a bizarre sight. I don't know how long I stood there watching it, still hardly believing what I was seeing. The seeds did not appear to be aware of me, or at least they paid no attention to me. Those that wished to travel did not approach me to fasten themselves on my clothing and take a ride to another place, drop off and plant themselves. Evidently they were only then in the process of discovering their new powers, and were too taken up with them to notice anything else.

Belatedly, I realized the full import of what was taking place. If this was happening on an extensive scale, perhaps in large portions of the world, it would throw nature so much out of balance that civilization might be destroyed. If seeds could travel the way these showed the ability to do there would no longer be the prodigious waste of seed, but nearly every one would find a place to grow. They would crowd out man, take over the earth.

I left the ravine, then, rather hastily. I did not give a backward glance, so taken up was I with the question of what I should do. I returned to my house and went to the telephone. Sitting before it I picked it up, hesitated, then put it down again.

My first instinct had been to call the Atomic Energy Commission in Washington and report the phenomenon to officials there. But after I pictured what it would be like to tell them that the seeds of the ravine on my farm were going berserk, I decided against that.

I thought for a moment I could call the FBI—until I visioned my asking them to come and arrest some mobile seeds with minds of their own.

I was sure I could tell our local police force over in town, but not after I could hear, in my imagination, the chief giving his loud laugh at the news.

I wanted to call up my friends and neighbors and ask them if they had noticed anything of the kind taking place on their farms, but I was sure they would laugh at me, too.

Trembling slightly, I turned on a TV news program and waited for some mention of seeds gone crazy. There was none, no matter to how many channels I twisted the dial.

I looked out the window. I could see no evidence of over-active seeds near the house.

I began to wonder if I had really seen the sights in the ravine. Perhaps, in my continued mourning for my wife and going there again for the first time, it had been an hallucination of some sort.

Finally I decided that I would wait until morning before I took

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any action to inform the world. Then I would go to the ravine a second time. If I saw the same sights I would phone the Atomic Energy Commission. If I saw nothing I decided I had better take a vacation or have an interview with a headshrinker.

That night I slept very little, spending a good deal of the time questioning my sanity. I got up early and, without waiting to eat any breakfast, made my way to the ravine, taking along a pair of strong binoculars. At its brink I was arrested by an incredible sight.

So many of the mobile seeds had gathered there that I could see, because of their crowds, even the smallest of them down below. Hastily I put the binoculars to my eyes in order to see them in detail.

At first I couldn't quite credit what the seeds appeared to be doing. It looked as if they were preparing for war on each other.

At least that is what the Burrs seemed to be doing. All over the ravine they had gathered in groups that must have numbered hundreds of thousands each. The groups had formed ranks like small armies and were marching up and down, as though training. From where I stood each appeared to be a gigantic centipede which continually changed form, long, wide, thick and then thin.

Other seeds, now also present in myriads, got out of their way quickly when the Burrs marched in their direction. The Burrs themselves paid no attention, but went about their marching silently, grimly, and tirelessly.

Some of the other kinds of seeds seemed to be greatly disturbed by this curious activity of the Burrs. The Maples, together with the Dandelion Fluffs, now clustered so thickly in the air that they nearly cut off the sun entirely, flew about nervously. Though I could not perceive that they had any eyes, they seemed to be looking down, or instinctively realizing in some way, what the Burrs were doing, and were highly perturbed about it.

The same held true of the others. The Cat's-claws gathered in large groups to, seemingly, watch the odd behavior of the Burrs. The Floaters remained tied up at the banks of the stream watching what was happening on both shores; a few had clambered out to see it more closely but moved back into the water when the Burrs marched close by. The Squirters had desisted from shooting out their seeds and the Exploders had followed suit; each appeared to stare curiously.

Only once did any of the other seeds interfere with the incessant marching of the Burrs. A Cat's-claw reached out with its claw at a marching contingent as if to detain it and inquire about what it was doing. Instantly that group of Burrs wheeled and engulfed the Cat's-claw, taking it right along as it resumed its slow, implacable march.

After the Burrs had marched for a considerable time longer they all

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stopped as if on unseen general order. There was an instant, then, before another order must have been given, for suddenly groups of Burrs surrounded each Exploder. They approached the Exploders closely, touching them with their sharp spines so that the Exploders could not jump away. The Burrs did not stick them but merely sat up right next to them, entirely surrounding them, as if threatening to impale them if they did not obey their wishes.

Their wishes soon became evident. The Burrs lightly prodded the Exploders along the ravine on each side of the creek to its downstream end. Here, ascending each slope of the ravine, they arranged the Exploders into a long line, each surrounded by its captors. The bulk of the thousands upon thousands of Burrs then formed ranks in front of this formidable artillery. They all remained in this position, not moving a single spine, waiting, as if for a further signal.

It came. This time it involved only one small group of Burrs which had an Exploder in its custody. While every seed present in and above the ravine seemed to watch with horrified fascination the Burrs surrounding the Exploder began to prod it gently at the rear. The Exploder appeared to resist what it was being prodded to do. Through my binoculars I could see it squirming and trying to get away. It seemed to be suffering acutely in some way, as if being tortured.

Abruptly it appeared to lose all strength to resist, its will broken. It jumped into the air in a forward direction, flying over the massed line of the Burr army and landed halfway up the ravine where it exploded with a loud crash, killing every seed and plant within several square yards about it.

A great restless movement spread through all the seeds of the ravine, the hundreds of thousands hovering in the air, those floating on the creek, and those watching on the ground. As for the Burrs, their entire army gave a short, awkward, awful dance of jubilation, as if celebrating an experiment that had turned out successfully.

The Burrs, plainly, meant to conquer the ravine for themselves, and all others who resided in it or had come to it for this strange convention of mutated seeds. The effect of the radiated ash on the Burrs had been not only to make them abnormally active but had acutely stimulated the conquering wish in their natures.

They waited no further before launching their war. They might have realized the shock effect of not permitting the enemy to realize exactly what was happening until it was under way.

Another group of Burrs sent off its Exploder, this time high into the air. It burst in the midst of the hovering clouds of Maple seeds and Dandelion Fluffs, creating havoc there. A rain of their dead bodies wafted down into the ravine. The

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masses of Maples and Dandelions flew higher, there to hover, watching and awaiting further developments.

These came instantly. The two great long arms of the Burr army, one on each side of the ravine, separated only by the brook, began to march forward. As it pressed on it killed or captured every seed that was not nimble enough to get away. A few put up a feeble resistance, but most began to retreat toward the upper end and up the sides of the ravine, to escape there.

The Burr army prevented this by prodding its satellite Exploders into action. The Exploders were forced to lay down a barrage all across the end and upper sides of the ravine, preventing escape, annihilating those who tried to get through. Once an Exploder went off about twenty yards from where I stood, shaking me. I continued to stand there, shifting my glasses to various spots in the ravine, taking it all in, awed and frightened.

Now the other seeds in the ravine rallied to make a stand against the Burrs. It was either counter-attack or be wiped out. The Stickers were the first to fight back, jumping to penetrate individual Burrs, killing them. But as soon as they landed they failed to have time enough to pull themselves out and attack a second time, for they were overpowered completely by the mass of Burrs. Still they continued, valiantly, their attack.

The Squirters shot their seeds into the ranks of the Burrs with good effect, making one section of the attacking Burrs, on the right side of the stream, falter.

It did not hesitate long. The Burrs, while keeping up the original barrage of the Exploders at the end and sides of the ravine, now sent some of their satellites against the Squirters and Stickers, with devastating effect. The strong lines of Burrs kept coming on, wiping out everything before them.

The flying seeds at this point went into action, as though they could not remain merely floating in the air and watching their fellow seeds be conquered. I heard myself cheering as I saw them descend and then try to engulf the Burrs, to smother them with the sheer weight of their numbers.

The Burrs, however, were too tough for this gossamer attack. While a few were overwhelmed, most merely gathered the fluffy and winged seeds into balls, packing them tightly together, in turn smothering them and kicking them away, behind.

The Floaters entered the fray, or at least tried to, leaving the water and sliding along to engage the Burrs, who merely pushed them back into the brook, not even bothering to kill them.

It all looked hopeless. By this time, lost with fascination in this bizarre struggle, I had taken sides. My side was with the other seeds against the Burrs. I knew that if they had organized, as did their

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enemy, they could conquer the Burrs. But they had no organization, and were losing the battle.

I had not been thinking to return to my house and report this queer war to the world; I would do that later, after I had settled the hash of the Burrs. Picking up a stick with which I planned to thrash about among them, I started down into the ravine.

Instantly all the seeds, Burrs and flying ones included, stopped all movement. It was as if they had lost their newly-found mobile powers and returned to their natural state. Yet I could see this was not true, at least feel it more than see it; I sensed that each kind of seed seemed to regard me hostilely. Yesterday they did not appear to be aware of me, but today they were obviously very much conscious of this large new living creature who had invaded their little world of peculiar war.

They proceeded to forget their own differences, stopping their war. Neither side, it seemed, wanted any interference from anything else. Enemy joined enemy in forming a concerted attack on what must have been to them a common foe.

To my consternation, before I could lay about among the Burrs with my stick even once, all the seeds, on the ground and in the air, moved in to attack me.

Two great clouds, consisting of the Dandelion Fluffs and Maple seeds, started toward me. I felt a sharp pain on both ankles and, looking down, saw a number of Stickers had jumped to penetrate my skin. At the same instant the Squirters attacked, most of their pellets landing harmlessly in my trouser legs, but a few reaching flesh. The masses of the Burrs wheeled and started marching toward me.

I was so startled, and at the same time filled with sharp stinging pain in my legs, that I dropped both my stick and my binoculars. I simply turned and ran, clawing my way up the side of the ravine for the short distance I had descended.

There, I glanced back, thinking possibly that the seeds would be satisfied to have driven me out of the ravine. This was not so. They were still coming, all of them, both in the air and on the ground, the Maple seeds and Dandelion Fluffs flying, the Squirters, Stickers, Cat's-claws, and others hunching along the ground, while the Burrs marched with the Exploders. Most astonishing of all, the Floaters had appointed themselves ferries to carry crowds of Burrs on the other side of the brook across the water.

I turned again, and fled toward my house.

Only the Maple seed and Dandelion Fluffs were fast enough to catch me, and then merely a portion of them. They descended upon me by the thousands, lighting like moths and hard-shelled insects. They could do no harm, except that enough of them might smother me, but it wasn't pleasant.

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On the way, as I ran, pursued by them and the others behind, I decided to get to my car, which was standing outside, rather than the house. In it I could both escape and get to town, to spread the alarm.

The seeds seemed to realize my intent. I will correct that. Now I am sure they knew exactly what I meant to do. For I had no sooner jumped into the car and slammed the door shut, leaving most of them outside, than they swarmed on the car, mostly underneath, to get at the engine from below. I inserted the starter key and turned it. The engine caught, choked, caught again, and then died. I kept turning the key but nothing further happened. In a moment not even the starter motor would work.

The insects had smothered the engine, probably by clogging the air intake of the carburetor and shorting the ignition system.

I glanced out. The flying seeds were now arriving in incredible numbers. I twisted my neck and looked behind. The others, including the Burrs, were marching in a great army toward me. I saw that if I meant to get out of the car alive and into the house to the telephone, I would have to move right away.

Flinging open the door of the car, I jumped for it. I nearly made it without difficulty, even though swarms of the flying seeds descended on me. I took the steps of my house two at a time. And there, at the top, I fully realized the ruthless intent of the seeds. To stop me they were willing to destroy each other.

An Exploder came zinging through the air. With a loud crash it went off slightly to one side. For a single instant I thought it would kill me. The concussion knocked me down, stunning me.

The fact that it killed all the flying seeds attacking me probably saved me from them. Even so, I could not have laid there on the floor of my porch for more than a short moment, or the others, following, would have engulfed me. As it was, I was able to get up and stagger to the door, pulling it open, to leap inside and slam it shut after me, locking it securely.

I stood there for an instant, leaning against the door, breathing heavily and recovering from my shock, before a frightening thought struck me. If there were any open windows they would already be coming inside. I ran to see.

As I secured all windows in the house, running from one to the other, I saw the seeds outside. I had not realized there were so many. I could now see that there were millions of them. Great clouds of Maples and Fluffs flew about the house, looking for an entrance. The Burrs and the others gathered on all sides, as if studying the situation.

By the time I reached for the telephone, jerking it off its cradle, the seeds had acted first. The line was dead. Looking out at it, or

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rather, where it had been strung from the house, I saw that the phone line was broken and lying on the ground. Masses of the flying seeds were leaving it; obviously they had lighted on it in sufficiently great numbers for their weight to carry it down, severing it.

That really scared me, not only their cutting the telephone line, but their knowing what it was for and figuring out a way to do it. It meant that a weird, threatening consciousness, combined with certain knowledge, had come to the seeds.

Only then did I remember the attack of the Stickers and Squirters on my legs, and felt their pain again. I looked down at my ankles, and bent to examine them. The Squirter seeds, after penetrating my skin, right through my socks, had died. Some of the Stickers also hung inert. But a few of them were still alive. Now they hopped off my ankles to the floor, from where they jumped at me again, renewing their attack.

I stamped at them with both feet. It was difficult to kill them. They seemed to have tough, resilient life in them. I had to grind several of them under my heel after plucking them out of my ankles. One jumped at my face, and probably would have put out one of my eyes had I not put up a hand and received it deeply in my palm.

Going into the bathroom I treated my wounds with an antiseptic. They were ugly wounds, far more than to be expected from the attack of things so small. I realized that they had poison in them, having developed that as well as a sinister mobility. I wondered if the poison was strong enough to kill me. I felt a little rocky, but it appeared that not enough had entered my bloodstream to materially affect me. But I realized that if enough Stickers could attack a human being they could kill him.

From windows on all sides of the house I looked out at the hordes of various kinds of seeds surrounding it. I hoped that they might take up their own inter-seed war again, but that seemed to have been completely forgotten. They all appeared to be conferring about their next move, even the Exploders talking it over (or however they communicated) with their recent captors, the Burrs.

They were not long in deciding on their method of attack. They founded it on their success with the telephone wire. It was to be, again, by weight of massed numbers.

They seemed to know what windows were. Over each of them they began to gather, covering them completely, darkening the house so that I had to turn on the lights. While I watched, terrified now, I knew they were piling up on each other outside with the intent of putting so much weight against the glass that it would break.

I waited, trembling. I felt no better when it became evident that the seeds, no matter how many of them, simply could not summon

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enough concerted weight to break one of the windows; unlike their method with the telephone wire, they were unable to pile themselves vertically, so as to apply their weight in that manner, but only horizontally.

It was not long before they must have realized this, for they left the windows. I didn't bother to turn out the lights. I had only one thing to do now. I knew they would get in at me and kill me.

Before they accomplished this I wanted to put down the facts about them for anyone who might find me. I figured this might help the world in case the mutation of seeds was occurring elsewhere. I sat before my typewriter and began to put down this account, writing it as fast as I could.

I am now up to this point in my record. I am sure it won't be long before the seeds outside find the way in at me. I have looked out again and seen a small group of them, several of each kind of seed, as if they composed a general council of some sort, gathered in a group, again conferring.

I wonder what will be the outcome of it all. My death won't matter so much, for I will be happy to join my dear wife, but what is to happen generally? If this is merely a local phenomenon perhaps, after they deal with me, the seeds will go back to their war. The Burrs, having released the Exploders, may find the Exploders and the others will meet them on equal terms. They might even annihilate each other.

Why the seeds fight among themselves I cannot fathom. Perhaps they are merely following the pattern of men unable to get on with each other. Why they stopped fighting each other and together declared war on me, man, may show that another kind of living thing, the equal or better of man, has arisen with the ambition to conquer the world.

If this activity is appearing elsewhere, or if in future it does appear, it is entirely possible that the seeds could be successful, if only by simple propagation. The thought makes me feel utterly helpless in my present situation. If only I could get out and warn people, possibly in time, that X*o*v$b½. . .

The reason for those marks of bad typing is that the seeds have at last learned the way to get in at me. It so startled me that my fingers jumped all around the keyboard of my typewriter.

They have sent an Exploder against one of the windowpanes.

The glass has crashed in.

Now the seeds are pouring through. Great solid streams of them are coming in. They see me and start toward me. The first has reached me and I am keeping to my resolve to type on until I can't make my fingers work any more.

They are now attacT+@xx-xxn,?q2. . .

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new york in $2\frac{1}{2}$ hours

by . . . Sir Miles Thomas

A vision of the supersonic passenger aircraft of the near future, and what this can mean to World Aviation.

A FLEXIBLE imagination is needed to realize that out of the development of guided missiles, capable of carrying powers of immense destruction over distances of thousands of miles, should emerge civil aircraft that can fly 125 passengers in great comfort from London to New York in two and a half hours. The return journey would take perhaps ten minutes less. Yet this is no pipe dream, but an expertly evaluated possibility.

Moreover, such aeroplanes would not need the great concrete wildernesses of airport runways that are nowadays such a costly feature of air travel. They would take off and land vertically, tied to invisible radar guide beams that would pierce cloud, fog and overcast. The prospect of such aircraft is fascinating. And it is of tremendous economic importance to Britain that their actual development should proceed apace; for their practicability is the outcome of work in two fields in which this country is pré-eminent—the "jet" gas-turbine engine, and the wizardry of radar control.

No one doubts nowadays the ability of aeroplanes to fly at speeds faster than sound. The lessons

Sir Miles Thomas, author of this article, was Chairman of the B. O. A. C. between 1949 and 1956. He was requested by the Air League of the British Empire to serve as Chairman of a special committee to study and pronounce upon the over-all aspects of the future of British air transport.

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learned in building the record-breaking British Fairey fighter and the English Electric P.1 give proof that the aerodynamics of supersonic flight control are understood.

Not so easy of solution are the problems of landing and taking off a supersonic passenger aeroplane that can fly far enough, fast enough and full enough of pay-load to make it an economic proposition. Supersonic flight means a thin wing, which in turn entails unacceptably high landing-speeds—speeds that are impracticable not only in terms of human judgment but of loads and pressures on undercarriages, tyres and brakes—and, particularly important, because of the length of runways involved. For practical purposes it is nowadays considered that landing and take-off speeds in excess of 125 m.p.h. are uncommercial. An aerofoil wing shape suitable for flying at 1,500 m.p.h. offers limited lift even at 150 m.p.h., yet 1,500 m.p.h. seems to be the target speed for the next generation of new aircraft.

The ability to take off and land vertically has another very important advantage. The amount of air space needed near a modern airport for marshalling incoming and outgoing aircraft is alarmingly great, especially in bad weather. The complicated control system that is needed to "stack" aircraft waiting to land at safely-separated heights is very exacting. Conversely an aircraft that can hover and is not dependent on its forward speed for its ability to stay aloft is far more amenable to fitting into a pattern of rapidly-handled traffic.

The future of airport design to cope with the steadily-expanding traffic of our age—it is increasing at about 12½ per cent per annum—is exercising the ingenuity of authorities the world over. For instance, while one Ministerial committee is tentatively considering scrapping some expensively laid runways at London Airport to make room for new buildings and car parks that will accommodate passengers and spectators, another committee is worried lest the big new subsonic American jet aircraft that have been ordered by both United States and United Kingdom airlines will demand lengthened main runways for assured transatlantic operation on hot, windless days.

Thus the development of aircraft that can rise and descend vertically means far more than just another evolution in aircraft. It forecasts a revolution in aviation, an entirely new system. Airports, because they will be smaller, can be located nearer the city centers; but the areas of noise disturbance to the public will be far smaller. Bad-weather operation will be more dependable.

Technicians of all the leading nations are intensively studying designs of vertical take-off aeroplanes — V.T.O.s, as they are known. One American company

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has a design in which the main plane, with its power plants, is hinged bodily about the fuselage, so that the airscrews either pull the aircraft forward, as is normal, or can be cocked skyward to give vertical lift. At the last French Aero Show a device that was little more than an upended jet engine with a seat for a pilot was repeatedly demonstrated as being capable of controlled vertical ascent.

The helicopter, a familiar feature of today's aviation scene, suffers the insuperable difficulty of being limited in its forward speed. But another promising British production is the Fairey Rotodyne, which aims at combining the principles of a helicopter and a normal twin-engined aircraft.

The transatlantic vertical-lift supersonic aircraft which shows particular promise is in origin the outcome of the design produced and demonstrated by Rolls-Royce and somewhat disrespectfully called the "Flying Bedstead." Since it was first flown, development in guided missiles has brought into being very compact jet engines that are well suited for multiple installation to give vertical lift in a large aircraft.

The basic concept for a supersonic transatlantic V.T.O. civil airliner, as presented to my committee, on which realistic engineering evaluations have been done by Rolls-Royce research engineers, envisages an aircraft which looks almost like the paper dart of one's schooldays. The passenger cabin, large enough to take more than 100 people, would be a completely-sealed structure flanked by banks of downward-pointing jets which look after the vertical lift to something over 50,000 feet—long after the main horizontal jets have taken up the forward propulsion through the sound barrier to a cruising speed of about 1,500 m.p.h.

Such an aircraft should be economical to run because it is so fast that it shuttles back and forth along its route very frequently; problems such as catering and sleeping accommodation solve themselves, since every flight is of such short duration.

Admittedly the development of such aircraft would be costly. Admittedly, too, the project has not by any means reached the prototype stage. But the basic principles are regarded as proven, and the experiments so far are definitely encouraging. We in this country have such a lead technically that there is a strong case for believing that money spent on such development would pay handsome dividends.

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the son of jalnor

by . . . Robert Moore Williams

Was he really insane—or did he have the answer to these swirling lights and this strange thought force?

HARRY SCHULTZ, deeply engrossed in the testing project assigned to him, reached over to the switch bank that controlled the distribution of power to the various pieces of equipment inside the laboratory, and pushed the button that fed current into his test rig. Performing this operation hundreds of times each day, he was sure his fingers knew their way to the right switch without any conscious direction from him. This time, unknown to him, his fingers made a mistake. What he actually did was push the button that fed current into the super-duper, hush-hush project that Halter, chief of the research department, would not permit anyone except himself to touch. The result was similar to the triggering of a small atom bomb.

Bong!

Schultz rocked back on his heels as a burst of sound like the chiming of a huge, deep-toned bell rolled through the laboratory. The engineer had heard many powerful sounds in his life, the bull-throated roar of block busters and the thundering-crash of massed artillery fire during the war, and afterwards, one of the Big Noises down Bikini way,

Few writers have contributed as much to the stature of Science Fiction as Robert Moore Williams who returns to these pages after a much too long absence. Here is an unusual story of what can happen to a group of people when they come a shade too close to the curtain separating two worlds.

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but he had never heard anything like this rolling bell-sound that shook the whole lab.

A ghost materializing inside a vault at a Federal Reserve Bank would not have been more startling than the bonging of a great bell in this sound-and-moisture proof testing laboratory, sunk deep in the ground and so heavily shielded that even cosmic rays had to have a special engraved invitation before being permitted to enter.

While the sound was still ringing in Schultz's startled ears, the ponderous door of the lab was jerked open and Halter entered. The chief of the research department had heard the sound over the communication system that connected the lab with his office. Halter was in a lather.

"What the hell did you do?" Halter shouted. Anger was in the chief's voice, also a kind of desperate fear as if he had just been told that a cobalt bomb had been released in the sky overhead and was on its way down. In addition, Halter seemed to feel that Schultz was personally responsible for the dropping of this mythical bomb that was going to blow hell out of everybody and everything.

"I didn't do anything," Schultz answered. He was alarmed and disturbed, not only because of the sudden explosion of sound but also because, so far as he knew, here was an effect without a cause, something that simply could not take place. "Hell, Ben, it just happened."

"Nothing just happens," Halter answered. He was instantly in an additional burn because a subordinate had dared to call him by his first name. Halter was a big man but the bigness in him was turning to fat around the middle and under the eyes. Once he had been a fairly good engineer, until he had discovered that being a good office politician was more profitable for him, and had concentrated his efforts on that. Finishing college on the GI bill, then working his way through a post-graduate course, Harry Schultz had been too busy learning electronics to learn much about anything else, with the result that he knew nothing about company politics, and cared less. The things Schultz wanted to know—and he wanted to know everything—belonged in the category of science.

His skill and knowledge had earned a good job in the testing lab for him, but his deficiency in company politics would always keep such men as Halter above him, little office Napoleons who schemed their way past better men than they were.

"Look, Schultz, I'm your immediate superior and the company holds me responsible for the efficient operation of the testing division. I want you to spend your time at your assigned duties instead of thinking of tricks to mystify the company officers. What are you trying to do, create some special effect down here so you can attract the

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attention of the head men and get yourself promoted?"

Schultz did not back away from the barrage of words and the anger verging on hate that accompanied them. He had faced worse things than words. While he did not understand Halter's violent reaction, he did not want a fight with the boss. "Look, Ben, you've got me all wrong."

"Like hell I have," Halter shouted. "I want you to stop whatever it was you did, or I'm going to turn in a report that you are trying to create some kind of an effect—"

Bong!

Halter jumped six inches high as the bell sound came again. Schultz stood quietly. The sound was almost impossible to describe, having in it something of the same effect that a good bass singer gets into The Bells of the Sea, and also something of the feeling that comes on a clear cold night in open country, when the stars lean so close to the Earth that the mystery and vastness of the Universe is almost perceptible to the naked eye.

In the air in the middle of the laboratory a single beam of light like a great gleaming jewel came into existence. Unsupported, it floated there. While Schultz, not daring to breathe, watched, the jewel began to rotate. Beams of light lanced out from each of its facets. On each of these beams, at a distance about two feet from the center, other smaller jewels sprang into existence, each of which radiated beams of colored light, ruby, amethyst, gold, blue, and all the shades of green ever seen by the human eye. Silently turning, the lattice of jewels and connecting lights hung in the air like some miniature solar system that was immune to the effect of gravity.

"What—what is that?" Halter gasped.

"I think it's some kind of an alien life-form," Schultz whispered. He had not intended to say this but the words had popped unbidden into his mind.

"Nuts!"

"All right, you tell me what it is."

"It's—" Fear came up in Halter, locking his throat. He looked as if he wanted to run, but did not dare. Behind him, his secretary appeared in the heavy door which he had left open.

"Mr. Halter, there's a man who insists on seeing you—" She saw the flaming jewel. "Oh, pardon me. I—" Her eyes widened in surprise. "What is that thing?"

When no one answered her, she turned and bolted up the steps.

Bong! Again the deep toned bell echoed through the lab. As if this were a signal, the circling jewels began to retreat down their individual lines of light to the central core. In a second, only the big jewel was hanging unsupported in the air.

Then it flicked out of existence and was gone.

Only the slightest trace of ozone

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in the air indicated that anything had happened.

"Schultz—"

"Excuse me, but I followed the little lady," a man's voice spoke from the door. A worried tone appeared in it. "And, as I was coming down the steps, I thought I heard the booming of the Bell of Jalnor. Pardon me if I am intruding." His gaze went from Halter to Schultz. The expression on his face was that of a dog that is fully expecting to be kicked and is trying to select the man with the softest shoe. His eyes settled on Schultz.

The fact that this man looked as if he had crawled out of a rubbish can did not matter to Harry Schultz. The frayed and dirty cuffs, the collar worn at the edges, the shabby shoes down at the heel, did not concern the engineer. All that mattered was that this man had had a name for the bell sound.

"Do you know what that is?" Schultz asked.

An eager smile appeared on the man's face. "Oh, yes. Certainly I know."

"Then start talking," the engineer said.

"Hold it for a second, will you, Schultz?" Halter interrupted. His eyes went over the intruder in a searching gaze that missed nothing, including the size of the probable holes in the man's socks. "Who the hell are you?"

"Why—I—" The intruder lost his smile. "My name is Metsair," he answered. A trace of pride showed in his voice as if to indicate that the name he had spoken was a good one.

"We don't allow bums in here," Halter said. "Get out!"

"Yes, sir." Pain on his face, Metsair turned to leave.

"Wait a minute," Harry Schultz said. "I want to talk to you."

"Of course, sir," Metsair said. "But—" His eyes went to the research chief.

"Can't you see he is only a nutty bum who has wandered in here by mistake looking for a handout?" Halter said. "We can't have him in here. He might steal something. This equipment costs money."

"I may look like a bum but I am not a thief," Metsair said.

"Get out!" Halter ordered.

"If this gentleman wants to talk to me, I stay."

"I most definitely want to talk to you," Schultz said. Taking Metsair by the arm, he led him to his test rig.

For an instant, Halter looked as if he was going to explode, then he turned and raced up the steps to the main floor. "He's heading for the front office," Schultz thought. "Well, let him. I can get another job, but if I don't talk to this man, I may never hear that bell-tone or see those lights again."

One fact Schultz very quickly learned. Metsair might look like a bum but he had a detailed and accurate knowledge of electrical engineering. Schultz had been using cascaded low-gain amplifiers, the

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best that money could buy. Metsair glanced at them and said approvingly, "Ah, yes, the Forlington low-gain rig. A very efficient hook-up. But the Forlington rig did not open the veil enough for us to hear the Bell of Jalnor."

"Eh?" Schultz said. "Was that thing that we saw called the Bell of Jalnor?"

"Saw it? *Saw it?*" Tension appeared in Metsair's voice. "Do I understand that you *saw* something?"

"We certainly did," the engineer answered. He gave a quick description of the flaming jewel that had appeared out of nowhere and of the smaller jewels that had circled it. Metsair's mouth closed in a thin, tight line as he listened.

"Ah, yes." Metsair's eyes went past Schultz to the open door. He shook his head. On his forehead a thin film of sweat was visible.

"What was that thing we saw?" Schultz said.

"You have had a very interesting experience," Metsair answered. "Very interesting indeed. You should write it up for one of the psychological journals."

"I've just lost my job by insisting on talking to you," Schultz said. "I would appreciate it if you don't try to give me the brush-off. It won't work, you know. I heard that sound. I saw those flaming lights. If it takes me all the rest of my life, I'm not going to quit trying until I find out what they are."

Metsair's eyes came to rest on the engineer's face. Again he shook his head. "The stubborn type. You would be that." He nodded toward the exit. "If I let myself take one step in that direction, I will start running and not be able to stop until I am exhausted."

"I don't scare easily."

"I see you don't. It would be better for you if you did."

"Why?"

"One who has seen any of the Sons of Jalnor does not ask that question."

"I'm asking it," Schultz said. "Who is Jalnor?"

Metsair's sigh indicated the impossibility of being reasonable with a stubborn man. "He lives beyond the veil. I do not know whether there is only one Jalnor, or ten million of them all exactly alike."

"I tried to tell Halter it was an alien life-form," Schultz spoke. "He said I was nuts."

"Not a bad idea," Metsair commented. "Being nuts, I mean."

Schultz ignored the comment. "Have I accidentally penetrated into Jalnor's dimension here, for the first time?"

"That you have penetrated it is obvious," Metsair answered. "But that you have done it for the first time—No. This does not follow. On the contrary, there are those who have known of Jalnor for many ages and who have carried on a traffic with him, of sorts." A noticeable shiver passed over the man's body as he spoke.

Listening, Schultz felt his own

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muscles begin to tighten. A part of his mind was saying that this conversation was well over the borderline of insanity. Another part was scornful of this idea and was keenly curious. "What is so bad about Jalnor?" he asked.

"It is just that he is so—different," Metsair answered. "I tell myself over and over again that he only seems bad because he is so different and that it is only this that makes him seem to have no regard for human life or human sanity. Someday I hope I will know that this is true." A shy smile lighted the man's face.

Schultz wet his lips and carefully selected the words he wanted to use. The problem was that there were no words to convey the real questions he had in his mind. How could he ask intelligent questions about a world, and a life-form, that he had not known existed? This was something that would require careful study. If he knew Halter, he would not get to study it on company time, even if he was lucky enough to keep his job.

"How does it happen that you know about Jalnor?"

"I have made contact with him," Metsair answered reluctantly. Schultz noticed for the first time that sweat was on the man's face. "There are things here in this dimension that he wants. I gave him what he wanted and he gave me something in return, the right hand washing the left. Then I discovered—" The sweat became more obvious: "—his complete disregard for human life and I decided to stop working with him. I have not found this easy." Openly, Metsair wiped sweat from his face. Watching, Schultz felt a kinship with this man and he sensed that Metsair reciprocated his feelings.

"There he is, gentlemen," Halter spoke from the doorway.

Metsair flinched and tried to run. The only exit from the lab was blocked by two men wearing white jackets. The taller of the two carried a strait jacket. They moved into the room with a sure purpose. Metsair tried to hide under the workbench but was caught before he could get out of sight.

"What the hell is this all about?" Schultz asked.

"Take it easy, buddy," the tall man answered. He flashed an identification card with the words FAIR-HOPE HOSPITAL printed across the top. "One of our patients got away— Take it easy, Joe, and stop trying to bite me. You know we're not going to hurt you. We're just going to take you for a ride in our shiny new car, with the siren going, and when you get home you can take a nice long rest. You love the siren, don't you, Joe?" The last was spoken in a soothing voice to Metsair as the two men expertly forced his arms into the strait jacket.

"I still don't—" Schultz began. Startled and shocked, he had not had time to react intelligently to this situation.

"He escaped a couple of weeks

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ago and we've been looking all over town for him," the tall man explained. "Caught a glimpse of him coming into your place a few minutes ago. He was once a brilliant electronics engineer, but now he is as nutty as they come. Joe, I asked you once to take it real easy," he ended complainingly.

"That's a lie," Metsair said. "Please don't believe them." He was speaking to Schultz, begging the engineer to believe him, as the two men carried him out of the room and up the steps. The engineer would have followed but Halter stood in the doorway.

The chief's face was white. "Imagine a real live nut coming walking right into our testing laboratory." The tone of his voice implied that this, somehow, was Schultz's fault.

"Nutty or not, I want to talk to him," the engineer said.

Halter shrugged. "That's your affair, but you'll have to do it on your own time. And one other thing: I talked to the front office. They said you were to be kept on unless you caused further trouble and that you are to be relieved of all duties here and assigned to another division."

His words hit Schultz harder than a fist in the midriff. "But I can't stop this project now. I've got hold of something."

"What?" Halter said.

"That bell sound! Those swirling lights. I don't know what they are, but they're important."

"Discontinue all work in that direction."

"But you saw them yourself!"

Halter stared at the engineer for a long time before answering. "I don't know what you're talking about," he said at last. "I heard nothing and I saw nothing."

Shaking his head sadly as if to indicate that another brilliant electronics engineer was heading toward a strait jacket, he turned and left the lab.

"Your secretary saw the lights too," Schultz yelled.

"Did she? I don't know about that. She just quit."

Anybody but a stubborn electronics engineer would probably have headed for the nearest saloon, for a couple of quick drinks, to help him forget everything that had happened. Schultz went straight to his own tiny office, where he methodically laid the telephone book on his desk. He was going to find Metsair, and talk to him, if he had to fight, or bribe his way, past all the doctors and all the hospital attendants in every hospital in the city. The man might be a psychotic, but he knew something.

The engineer got his first shock when he discovered that no Fairhope Hospital was listed in the telephone book. Thinking it might be located in one of the outlying communities, he checked these directories, with the same result. Information told him she had no Fairhope. She had a Fairlawn and a Fairview, one a cemetery and the

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other a lying-in home. Next he tried his personal physician, who referred him to the biggest neuro-psychiatric clinic in town. They had never heard of a Fairhope Hospital. Checking their directory, they stated there was no such place listed in the United States.

When he had finished these inquiries, Schultz carefully put the telephone book back in its place and checked his own pulse. It was a little high, which was the way it should be under these circumstances. He checked his reflection in a mirror. It was a little pale, but the face that looked back at him was the one that he had always thought belonged to Harry Schultz.

"I'm me all right. And I'm not nuts," he said to himself. "But who is Metsair and who were the men who kidnapped him?"

Obviously, to have a false identification card and a strait jacket ready, and to be wearing white coats, these men had been ready for this situation for some time. What was not obvious, at least to the engineer, was what he was going to do. Because he was Schultz, he knew he was going to do something.

Waiting until the day's work was done and the staff had gone home, he went back to the basement lab and turned on the equipment. Nothing happened. Checking carefully, he discovered the mistake his fingers might have made. Checking still further, he discovered they had made it.

Bong! Again the great bell tolled from some infinitely distant fairyland. There was something about the sound that raised the hair at the back of the engineer's neck. Not that it was threatening, but that it was so *neutral*. The vices of men, the follies of men, the desires of men seemed to be completely without meaning to the bell sound. Until this moment, Schultz had not known that neutrality could be so horrifying.

As the central jewel swirled into existence, Schultz held his breath. Calling it the Son of Jalnor, Metsair had been desperately afraid of this. As he watched it come into existence, Schultz realized what Metsair had meant when the ragged man had said that if he took one step toward the door, he would start running and never stop. The engineer knew he would do the same thing, not because he had as yet been definitely threatened by the Son of Jalnor but because of his own fears. Vaguely he wondered how many millennia men had been running from the unknown. He held his ground. The light beams lanced out and the circling jewels came into existence and took up their orbits around their parent sun.

"What do you wish of me?" a thought whispered in the engineer's mind. Telepathy too! This knowledge jarred him, but not too much, for he had intuitively expected something of this nature. He knew his own mind was supplying the words and was giving meaning to

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a stimulus that was completely nonverbal, but far more important than understanding at this point was the fact that communication had been established. Schultz sought desperately for words to use in answering.

What did he want of this Son of Jalnor? It seemed to him that a million questions were clamoring in his mind, each seeking his attention at the same instant. There was so much that he wanted to know! All his life the desire to know had driven him. Now he had a chance to satisfy it! He tried to force his mind to be still, to settle on one question at a time, but it was churning like an eddy in a jet blast.

"Where is Metsair?" This was not really the question Schultz wanted to ask but it was the one that forced its way through the turmoil of his mind.

"Is that important?" the answer whispered back to him.

"Yes. I mean—everything is important!" Schultz almost choked over the words that were trying to get past his lips. "Who are you? What are you? Where did you come from? What do you want? How do you defy gravity? What is the frequency that opens the door for you?"

"Do you wish to know that so you can open or close the door as you wish?" The thought in the engineer's mind was completely neutral but his own deep feelings were suddenly coloring it with fear.

"Yes."

"So you can send for me and have me come when you desire me?"

"Damnit, I don't mean—"

"Or do you wish to know how to penetrate the veil so you can come into my dimension?"

"Is that possible?" Schultz blurted out.

"Possible but not very comfortable," the thought drily whispered in the engineer's mind.

"What did you do to Metsair?"

"Nothing."

"Why was he so frightened of you?"

"He ran from the devils in his own mind."

"Do you really mean that?"

"Of course I mean it. Metsair, and the others, found fear in themselves. Not recognizing its true source, they blamed it on us. Humans do this. That is why they are humans." The voice in the engineer's mind was cool and impersonal.

As the engineer recognized the impersonal nature of the voice whispering in his own mind, his fear suddenly left him. This flaming mechanism of floating jewels and connecting lights was not a threat! Encountering it, humans who had feared the unknown, had fled from it. But it was not dangerous. It was a friend of the human race, if only one man would recognize this fact.

Wiping sweat from his face, Schultz realized that the tremors were also gone from his body. Now

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he could ask questions, the important questions that men had wanted answered for countless centuries! Now he could know! Exultation swept through him in a rising flood.

He was Harry Schultz, born with the desire to know how and why things happened. The instruments in this elaborate laboratory were all expressions of that urge, in him and in other men. All men shared this impulse in greater or lesser degree. The instruments here were like fishing rods thrust into the unknown. They fished in that mighty rush of waters, not knowing what they were going to catch. Sometimes it was a minnow. Now and then it was a whale. Occasionally it was a shark, all gaping mouth, gleaming teeth and threshing body. Did the men who feared they were going to catch sharks succeed in catching them? Were the sharks in the minds of men and not in the Universe itself? Schultz did not have the answer to these questions, but now he had help in seeking the answers. When the knowledge of human scientists was added to the data possessed by the Son of Jalnor and when the wisdom of the light creature was added to the knowledge men had garnered through the centuries, the result would be such an upsurge of progress that would leave reeling the mind that tried to grasp its implications!

"Tell me—"

"Someone comes. I go now," an answering whisper came into the engineer's mind.

The circling jewels moved inward over their connecting light beams.

"Wait!" Schultz shouted. "I have just stopped being afraid of you. Now we can't really begin to work together! Don't go—"

The great bell bonged. The Son of Jalnor vanished.

The door of the lab opened. Halter stood there. He had a gun in his hand. Murder was on his face.

"I thought I'd find you here," Halter said. "I thought you would not be able to keep your nose out of my business."

Schultz ignored the gun. The exultation at contacting a creature from another dimension was still strong in him. "This is company business," he said.

"The laboratory belongs to the company," Halter answered. "But the Son of Jalnor belongs to me." I discovered him and he is mine!" There was no mistaking the possessiveness in his voice.

"Metsair said that others knew—"

"A few damned fools have fingered around the edge of the secret," Halter said, grudgingly. "But nobody ever brought forward a scientific solution to the problem until I uncovered it, developed the equations, and built the equipment." His voice was pure self-flattery. He lifted the gun. "Just stand still."

The engineer looked at the gun, then his eyes went up to Halter's

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face. What he saw there shocked him. If this man secured control of the Son of Jalnor, the results might be disastrous.

"Murder is a dangerous business," Schultz said.

"Who said anything about murder?" Halter answered. "I'm just going to have the boys take you away for a while until I get my equipment cleared out of here. That's all. You don't need to worry."

Schultz knew from the tone of his voice that the man was lying. Halter picked up the lab phone and punched the outside button. In the silent room, the buzz of the ringer was clear. There was no answer. Schultz moved quietly. Instantly the gun swung to cover him. "Don't try to jump me," Halter said. He laid the phone back on its cradle. "Walk out of here ahead of me. I'll take you away myself."

Schultz opened the ponderous door of the lab and started up the steps, then backed away as he saw two pairs of legs coming down toward him.

Two men almost fell into the laboratory. They were no longer wearing the white jackets but one look at them told the engineer that these were the men who had kidnapped Metsair.

"Boss, he got away!" the tall one panted to Halter. "We came right straight here to let you know. Boss, don't shoot me. I didn't have anything to do with it." The last was spoken in a wail as the tall man veered away from the muzzle of the gun that was now covering him.

"I told you to keep him tied up until I found out what Schultz was going to do. What happened? Did you get drunk and let him slip away?" Halter was in a thundering rage but under his anger was sudden fear.

"Honest, neither of us have had a single drink." Sweat was suddenly spurting from the tall man's face. "We just went out to get something to eat and when we got back, he was gone."

Seeing the two men, Schultz realized that Halter had just been trying to call them. He also knew that they had been working together for months. When Metsair had appeared, all Halter had had to do was call them. They had had the false identification card and the strait jacket all ready. Schultz frowned to himself. This meant that Metsair and Halter already knew each other and had been working together, probably here in this laboratory at night. Becoming afraid, Metsair had stopped work. Metsair thought he had been afraid of the Son of Jalnor but had he actually been afraid of Halter instead? Had his real enemy been a human being and not a creature of light from another dimension? Had Metsair finally returned to Halter when forced to do so by threatened starvation?

Schultz suspected he knew the answer to all of these questions, but what he didn't know was what

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to do about them. The gun in Halter's hand was a compelling fact, the smoldering fury in the man was another, even more dangerous threat.

"Where is he?" Halter jabbed the gun toward the tall man.

"I don't know," the wailed answer came. "He's probably hiding out in the parks like he has been for the past month, and bumming for something to eat."

"We've got to have him. Without him—"

"Why?" Schultz said.

"None of your business."

"Well I'll be damned!" the engineer gasped. "So Metsair, instead of you, was the man who really discovered the way to open the veil! You let him work with company equipment at night, then tried to kill him when he discovered something important, so you could grab it. I should have known you weren't enough of an engineer to design and build this super-duper resonator!"

The instant he spoke, Schultz wished he had kept his mouth shut. Halter's eyes, and the gun, swung to him. The eyes were more dangerous than the weapon.

"Take him out and dump him in the river. Then get busy and find Metsair."

Schultz measured the distance to the gun with his eyes and knew he had no chance against this man. He might have a little chance against the two men, who were not the same breed as Halter. Shrugging, he started toward the door.

It swung shut in his face.

In the lab, the only sound was the frightened breathing of startled men. The tall man grabbed the inside latch and shoved. The door would not budge. It was being held on the outside.

"Who is out there?" Halter shouted. The communication system would carry his voice. From a speaker in the lab an answer came. "Me."

"Metsair!" Halter whispered. His throat muscles bulged as he started to order Metsair to open the door, then tied into knots as he realized he was no longer in a position to issue orders to anyone. "Oh, hello, Jim. I'm so glad you're back. We were all worried about you."

Halter's effort to force cordiality into his voice was the sickest sound Harry Schultz had ever heard.

Metsair did not miss the real meaning in Halter's voice. "I'm fine," he said, outside the door. "So good of you to be concerned about my health." His laughter had mockery in it.

"You son—" Halter threw his body against the door. It did not give.

"Try again," Metsair invited, outside.

"In the morning, the staff will turn us loose," Halter answered. "And you will be on your way to the penitentiary."

"In the morning, when the staff

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arrives, they will find three dead men in a locked lab," Metsair answered. "How this happened will be a great mystery."

"The police will catch you," Halter shouted. "They will put you in the gas chamber—"

"When that happens, it will be a great comfort to me to know that you have already preceded me through it."

"What do you mean?"

"You are in a gas chamber now, if I choose to make it such. All I have to do is shut off the air compressor—" A click sounded. At the same time the almost imperceptible movement of air through the lab began to slow.

The tall man began to tear at the sheets of cellulose that were used as insulating material on the door.

"You're wasting your strength," Schultz said. "There's an inch of steel behind that padding."

"But what are we going to do?"

"Die of suffocation," Schultz said.

"Schultz?" Metsair's voice over the speaker suddenly had concern in it. "Don't tell me they have trapped you in there. No! I had already planned how we would work together—"

Halter's hot eyes came to the engineer's face. "He will open the door for you. Tell him to open it or I will put a bullet right in your heart!"

The engineer looked at the weapon and at the man behind it. "Don't open the door," he said to Metsair. "To do so will only get both of us killed."

"Damn you—"

Schultz held out his hand. "Give me the gun."

"Nuts to you. This gun is the only chance I've got."

"You haven't even got that," Schultz said. "There is something that you are more scared of than death itself." Reaching out, he closed the switch that fed current into the secret equipment.

Bong! The great Bell of Jalnor flooded through the room. As the light creature swirled into existence, Halter spun toward it. Here was something that he had never understood, something out of the unknown. The gun spouted flame at the swirling lights.

Striking downward with all his strength, Schultz hit Halter across the wrist. The gun fell from a nerveless hand. The engineer grabbed it as it hit the floor and turned it on Halter. Backing away, Schultz turned to the Son of Jalnor. Desperate fear was in his heart now, that the light creature had been harmed.

"Metal passes through me without causing damage," the cool, imperturbable voice whispered in his mind.

Schultz wiped sweat from his face and spoke at the microphone. "Open the door, Metsair. I've got his gun."

The gun at their backs, Halter and the two men marched up the steps, through the silent building,

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and out into the streets. "Get going," Schultz said to them. "And don't ever come back." He watched them as they vanished in the night. He sucked air into his lungs. Nothing had ever tasted as good as this, nothing except knowing. Now he had the means to know. Exultation rose in him again.

Today in the city there is a new engineering firm called Jalnor Electronics. Rumors floating through engineering circles indicate that the two men who own it, Schultz and Metsair, are performing near miracles. The talk is that in another year or two they will have developed the transmission of power without wires and that they have already developed devices similar to X-rays which will permit doctors to see through the human body with greater clarity than an ordinary person can see through a window pane. The rumors say that this firm has some kind of secret robot computor that solves all of these problems for them. Neither Schultz nor Metsair ever confirm or deny the existance of such a computor but in this instance rumor for once is far short of the truth about the abilities of the Son of Jalnor. Grown expert at keeping their mouths shut, Schultz and Metsair are quietly building a bridge between two worlds.

MARTIANS IN SCOTLAND?

PEGGIE PHILLIPS' society column in the November, 1957, issue of the fashionable *Scottish Field*, reports on the concern in Glasgow that extraterrestrials might be mingling with good Scots. We quote:

"At any moment now, we should be on the way to settling whether Mr Adamski was telling the truth about those Venusians or other planet-men he met up with, in his books about flying saucers. Keen to believe in the Adamski tales, this department has been scanning the fellow citizens for years in the hope of noticing a Venusian or a Martian on the tram (trolley), recognizable solely by the tiny breathing tube attached to a nostril (according to Mr. A.). Supposing we did catch sight of such a one, we are persuaded that we could never go up to them and say, 'Are you a Martian/Venusian?' It might just be an Earthman with some breathing disability, and think how frightfully embarrassing."

"Still hoping that Mr. Adamski was true and not a racket, we are happy that the Russians *should* be first on Venus. According to the Adamski findings, those big-hearted, love-vibrating, highly evolved Venusians are about the only boys we know who could change the Russian character and set the Kremlin loving the Free World."

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shapes in the sky

by . . . Civilian Saucer Intelligence

What are these angels in the sky? Birds? Clumps of water vapor? Mirages? Or really Unidentified Flying Objects?

Angels.
Hordes upon hordes of them.
We shall have data of hosts of angels. . .

THUS Charles Fort begins one of the chapters of *The Book of the Damned*. He was speaking of the hosts of unknown bodies that have often been seen to cross our skies. Of course, in 1919, when Fort wrote, it was a question of visual observation only. It was not until many years after his death in 1932 that it was possible to write: " 'Radar angels' are spots on a *radar* screen that are caused by something unknown in the atmosphere." (*Science News Letter*, Sept. 14, 1957.)

In our last article we cited some examples of UFOs observed on radar. "Radar angels" form a rather ill-defined class of these, distinguished by two rather non-"saucer"-like characteristics:

(1) They loaf along at horse-and-buggy speeds.

(2) They are invisible, or at least hard to see, to the human eye.

This is the category of radar observations that the Air Force's Project Blue Book felt was "of no significance whatsoever" (Special

The following article, which could more properly have been called THE NATURAL HISTORY OF ANGELS, *is undoubtedly one of the most unusual articles to be prepared specially for this magazine by the Research Section of CSI, which publishes a newsletter and has an extensive file of UFO material.*

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Report #14, 1955, p. 77). The Report authors certainly did not mean to imply that the phenomena are spurious, due to malfunctioning of the radar, which would be untrue. Perhaps what they meant was that these "angels" are "of no significance" as evidence for flying saucers in the *narrow* sense—i.e., that they don't seem like observations of *metallic spaceships*. We may readily grant that they don't suggest metallic spaceships, without feeling, as the Report authors seem to do, that this takes all the interest out of them. It's uncertain whether these angels really differ from the high-speed objects mentioned in our last article. Maybe they simply have more time on their hands. As we shall see a bit later, some of these slow objects seem to be quite able to pour on the speed in true UFO fashion when they feel so inclined. Some of the cases we cited last time might well qualify as angels—the radar kibitzers at Orlando Air Force Base, though our information on them is scanty, sound particularly "angelic."

The apparently *purposeful* behavior of these Orlando objects (which are said to congregate when a rocket is about to be fired) is characteristic; it has been recognized for a long time. In what seems to be the first article on the subject in a non-technical publication, Wesley Price's "The Sky Is Haunted," in the *Saturday Evening Post* of March 9, 1948, this feature was singled out. Price stated that Kenneth Ehlers, of the Landing Aids Experiment Station at Arcata in northern California, had been picking up "gizmos" (angels) on his radar screen "for almost a year." Ehlers offered some generalizations on those he had seen:

"(1) Gizmos always cruise at 30 miles an hour. (2) They fly singly or in groups up to five. (3) They appear in any weather, day or night. (4) They cruise low, often at 800 feet. (5) They usually take a course about south-by-east. (6) They fly upwind, downwind, or crosswind."

"Ehlers has shown gizmos to such notable scientists as Dr. Luis W. Alvarez, the inventor of the radar Ground Control Approach System," wrote Price. "Dr. Alvarez cannot explain the gizmos, but he agrees that all radar pips must be caused by 'a discontinuity in atmospheric conditions.' A 'discontinuity,' in radar jargon, is usually something tangible, like an airplane or a rain cloud. . . . 'I don't understand, though,' added Dr. Alvarez, 'why the gizmos don't always move with the wind—*if they aren't alive.*'"

According to Price, "gizmos were reported in wartime before the A-Bomb." To be precise, it seems that they were first reported—and dubbed "angels"—in 1944 by radio engineers who were developing microwave radar systems at three eastern U. S. laboratories: Bell Telephone Laboratories in Holmdel, N. J., the Signal Corps Labo-

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ratories at Belmar, N. J., and the Chesapeake Bay Annex of the Naval Research Laboratory. (See *Proc. Inst. Radio Engrs., 35* (1947), pp. 494, 1105; *36* (1948), p. 363.) Of course, all this was secret at the time. It may perhaps be significant that 1944 was also the year of the sudden appearance of the "foo-fighters"—luminous, apparently intelligently maneuvering spheres seen by bomber pilots over Germany. These foo-fighters were seen the following summer over the Pacific (see *Amer. Legion Magazine,* Dec. 1945). So were the radar angels.

A dramatic account has been given by Keyhoe in *The Flying Saucer Conspiracy* (pp. 221-224) of an alarming radar sighting of a horde of angels during the Navy's attack on Okinawa in the spring of 1945. The incident was described in detail to Keyhoe by one of the observers, the Combat Information Center officer aboard an aircraft carrier in the Nansei-Shoto (Ryukyu) islands. A dense formation of 200-300 "bogies" (unidentified aircraft) was detected on the scopes 120 miles to the northeast at a height of 12,000 feet, advancing toward the task force at 700 miles per hour—faster than any known planes could fly at that time. As the host of "bogies" approached, the carrier sent up twelve fighter planes in what looked like a futile gesture against certain doom. But to the utter amazement of the radar men, not a ship nor a plane was able to see a single thing in the clear blue sky when the radar showed the objects all about them.

In the fall of 1954, there occurred some very remarkable sightings of formations of invisible radar angels, similar in some respects to the "Nansei-Shoto ghosts." The locale this time was England. One day in late September, about noon, a U-shaped formation of blips suddenly appeared on radarscopes, flying westward at 12,000 feet. It consisted of forty or fifty objects, and covered an area eight miles wide and twelve miles long. As the operator watched, the end of the U opened up and the formation changed to two parallel lines; a few moments later, the formation assumed the shape of a "Z" (or "N"), before finally disappearing. This weird demonstration took place in a sky which, to the human eye, was empty—devoid of aircraft, birds, or UFOs.

Incredible to relate, the identical phenomenon was repeated no less than six times before November 7th, according to the London *Sunday Dispatch* of that date, which credited "a War Office spokesman" as its source. "Neither the War Office, which controls inland radar, nor the Air Ministry can say what these 'blips' represent. A careful check has shown that they have not been caused by any identifiable aircraft. . . . They appear from nowhere, about midday, flying at a height of 12,000 feet in an east-to-west direction. First seen by a civil-

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ian radar scientist, they have since then been plotted by all radar sites in the area. They are invisible to the human eye. . . . On the radar screen they appear as lots and lots of dots formed by between forty and fifty echoes. Every time they have been seen they have followed the same pattern." (Keyhoe, *The FS Conspiracy,* pp. 217-18)

Strange and sensational as these repeated English appearances were, they caused nothing like the furor that erupted in the United States in the summer of 1952 when some radar angels took a notion to inspect our nation's capital. Actually, this sighting was not essentially different from dozens of others, but it caught the newspaper editors' attention because of its location, and they gave it front-page scare headlines. The resulting uproar lasted for some days. Finally, all was "officially explained"—as radar mirages! Although the newspapers strove to convey that impression, the Air Force was not really responsible for this "explanation"—which traded on the reader's credulity so brazenly as to merit comparison with the yarns told by saucer "contact" claimants. The Air Force's *real* "official explanation" (if such it can be called!) has never received much attention.

Here—in brief—is what happened at Washington, D. C.:

The first objects appeared at 12:40 a.m. on July 20, 1952. Harry Barnes, senior air traffic controller for the CAA, was on duty in the Control Center at Washington National Airport: Suddenly he and his crew saw a group of seven "blips," at a distance of 15 miles, that had just appeared on the 24-inch scope. Since they had not come in from the edge of the screen, they had evidently come down into the radar beam from above. Their motion, by UFO standards, was languid—100 to 130 mph—and entirely uncoördinated. They performed the typical UFO angular turns and sudden reversals. "They acted as if directed by some innate curiosity—like a bunch of small kids out playing," according to Barnes. (NEA in N. Y. *World-Telegram,* July 29.) At intervals they disappeared, or perhaps jumped at great speed from one point to another. The other radar sets at the airport, and that at nearby Andrews Field, confirmed the presence of these unaccountable objects. Soon they were hopping and crawling all over the scope, flying with casual indifference over such sacrosanct and militarily *verboten* spots as the White House and the Pentagon. Some airport personnel went out to look, and saw orange lights in the sky. Airplanes in the vicinity were asked to look out for the objects, and some saw irregularly-moving bright lights. The veteran Capital Airlines pilot "Casey" Pierman saw six of these lights in fourteen minutes, and according to Barnes each of these lights agreed in position with one of the radar targets. The Air Force was notified early, but it was

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two hours before an F-94 jet arrived. While it was flying about, the radar blips absented themselves; and after it returned to its base, they came back. Although they seemed to shun this military plane, they showed an interest in the commercial aircraft and frequently followed them (as at Orly, in last month's article). About 4 a.m. one followed Pilot Howard Dermott of Capital's Flight 610 to within four miles of the airport; to Dermott it appeared as a large white light, in the same position as indicated by the radar. Shortly before daybreak there were ten of them playing leapfrog over Andrews Field. Andrews tower operators, notified by the Barnes group that their radar showed one of the angels was hovering directly over their radio range station, looked out: there it was. They described it as "a huge fiery-orange sphere." (Ruppelt, p. 214).

On the morning of the 23rd a great many more of these things were seen on the scope, loafing along at 35 to 40 mph "in pairs and threes" in a sort of procession to the southeast. This sighting—which showed remarkable agreement with Kenneth Ehlers's 1948 description—did not get into the newspapers. But at 9:08 p.m. on the evening of the 26th, just one week after the first excitement, eight objects—the original eight, maybe—returned to the National Airport and Andrews Field radar screens. Again commercial pilots saw lights where radar showed angels: United Airlines Flight 640, notified by Barnes that it was near three blips, replied: "We got one in sight. He's real pretty." Again a jet intercept was requested and—after a considerable delay—dispatched; but just as before, all the angels disappeared from the scopes when the two F-94's arrived, only to return a few minutes after the jets had left. But the radar controller wasn't going to let the things make him look like a fool this way. He called for the jets again, and a second pair was sent over at 1:40 a.m. This time the UFOs were obliging enough to stay within radar range. One of the interceptor pilots, Lt. William Patterson, saw four of them, as white lights about ten miles ahead of him and slightly above him; he gave chase at his top speed (about 600 mph) but "had no closing speed"—i.e., couldn't catch up with them; the objects disappeared, still ahead of him. A few minutes later, when about 15 miles southeast of Washington, he saw another as a steady white light about five miles away. He chased this one for about a minute before he "lost visual contact." (Sources for the above description: Ruppelt, pp. 212-224; Keyhoe, *FS from Outer Space*, pp. 62-87; LIFE, August 4, 1952; Barnes, as cited. These accounts agree on all essential points.)

On the same night, exactly the same thing was happening in California. Here the UFO was seen not only on ground radar, and visually

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by the F-94 pilot (as a large yellow-orange light), but was also "locked on to" by the F-94's own radar. The jet approached the object several times, only to have it pull away at a terrific speed; then in a minute or two it would slow down enough to let the plane approach it again—a "cat and mouse game," in the pilot's words. This occurrence was not made known to the public until Ruppelt's book appeared in 1956 (p. 222).

However, the events over Washington got into the papers, with a bang. The fact that jets were scrambled for "saucers" reached the public for the first time. Reporters besieged the Air Force press desk. On the morning of July 29 the New York *Times* half-plaintively, half-angrily demanded that the Air Force assure the nation immediately that it was all a ludicrous mistake: "Though the Air Force has done its best to dispose of the nonsense that comes from imaginative observers of 'objects,' it might do better. Why did pilots of jet planes that pursued 'objects' over Washington fail to catch up with their quarry? Such questions are bound to be asked. Unless they are answered in simple language, belief in visitors from outer space will be strengthened in those who cannot distinguish between speculation and scientific reasoning."

On the afternoon of the 29th, Major-General John Samford, Director of Air Force Intelligence, held a press conference in which he attempted to allay these anxieties, without actually saying anything concrete—after all, since he knew no more about them than anyone else, there was really nothing he *could* say. If he enunciated an "official explanation" at all, it was in this immortal sentence: "I think that the highest probability is that these are phenomena associated with the intellectual and scientific interests that we are on the road to learn more about." Whatever this meant (if anything), it was not of much help to the press, which wanted to run the headline "AIR FORCE DEBUNKS SAUCERS"; so the next day's headlines ("AIR FORCE DEBUNKS 'SAUCERS' AS JUST NATURAL PHENOMENA": *Times,* July 30) were based on some remarks on radar mirages that Captain Roy James of ATIC had made at the conference. As Ruppelt puts it, "Captain James's answers were construed by the press to mean that this was the Air Force's answer—even though, today, these sightings are still carried as Unknowns."

Thus the "debunk" headlines were in fact *erroneous,* and simply represented wishful thinking by the press; but the Air Force made no effort to correct the error—far from it! Ruppelt (p. 224) candidly reports their satisfaction with these misleading news stories: "exactly the result that was intended—the press got off our backs." The fact that the public was being misinformed was of considerably less

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concern to the Air Force people. As for the newspapers, their ignorance and prejudice had virtually guaranteed in advance that the public would be misinformed.

Although the radar-mirage "explanation" favored by the newspaper pundits and Capt. James is known by all radar experts to be entirely inapplicable, it seems to be the most popular with laymen, possibly because of its association with the optical-mirage "saucer" theory of Donald Menzel. As we mentioned in our previous article, it was even proffered by the anonymous authors of Blue Book Report #14: "It cannot be said with any assurance what these radar sightings mean, but the most logical explanation is that they are ground targets reflected by an atmospheric temperature-inversion layer" (i.e., radar mirages); to which they prudently added, "The validity of this statement cannot be established." This is putting it pretty mildly: its *in*validity can be established.

Since radar beams are more easily bent than light rays, radar mirages (unlike optical mirages) are an everyday occurrence, and are quite familiar to any radar operator. As Barnes told Keyhoe, "Every man in here knows temperature-inversion effects. When an inversion's big enough, it picks up all sorts of 'ground clutter' — water tanks, buildings, shore lines, and so on. But anybody here can recognize it. It's nothing like those things we tracked. In the six years I've watched the scopes, absolutely nothing—high-speed jets, storms, inversions, or anything else—has ever caused blips that maneuvered like that." (*FS from Outer Space,* p. 100.) The traffic-control men at National Airport were bitter about the newspapers' publicizing of the mirage "explanation": they felt that such a suggestion amounted to calling them incompetent simpletons.

Probably no one concerned in this episode was aware that a competent discussion of "angels" by a radar specialist, Herbert Goldstein, had been published the previous year (in *Propagation of Short Radio Waves,* ed. D. E. Kerr, pub. McGraw-Hill, 1951; pp. 593-595). Goldstein states that "these echoes, known as 'angels,' have been observed by an increasing number of investigators," using 1-cm to 10-cm radar equipment, and, like Barnes, he comments that they "have a distinctive appearance." Speaking of unpublished observations made by his own group at the M.I.T. Radiation Laboratory, he says, "The echoes moved irregularly with speeds up to 20 mph. Occasionally they were seen at distances as great as 20 miles. The 'angels' seemed especially prominent after sunset. At times, the PPI (plan position indicator: radarscope) would be almost covered with them in a stippled dot pattern extending out 10 to 15 miles."

Goldstein mentions several explanations that have been suggested

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by radar men; mirage is not one of them. "The tendency at first seemed to be to ascribe the echoes to *inhomogeneities in the atmosphere*: thus, Baldwin states: 'The most attractive possibility is that the echoes are from clumps of water vapor.' However, in Sec. 7.4 it is shown that the gradients of refractive index believed to exist in the atmosphere are much too small to account for the observed echoes." Baldwin's idea has also been disproved experimentally: A. B. Crawford (*Proc. Inst. Radio Engrs. 37* (1949), 404) poured water on hot rocks to generate a dense cloud of steam. Far from producing intense radar echoes, it proved to be practically invisible on the radarscope.

"British investigators have paid considerable attention to echoes from *birds*. Some of the echoes may possibly be accounted for in this manner, although Baldwin failed to see any in a telescope mounted on his antenna." The bird theory has recently been revived by L. L. Bonham and L. V. Blake in an interesting article in *Scientific Monthly*, April 1956. Bonham and Blake describe and illustrate "phantoms" observed on shipboard radar off the Virginia coast in early 1950 and 1952. The average air speed of these "birds," as they call them, was 31 mph, ranging up to 63 mph (there are very few birds that can attain 60 mph in sustained flight), and the direction of flight was predominantly northward, "which suggests that many of the birds were migrating northward" (this in mid-June!)

Bonham and Blake were injudicious enough to lay their theory before expert ornithologists. They were told that in mid-June, 100 miles out in the Atlantic, migratory land birds, and even gulls, are out of the question; of the few oceanic species, only the shearwater is even partially nocturnal ("many of the observations of phantom echoes were made at night") and it flies so low on the water that radar could not see it more than two miles away. Gannets are large and high-flying, but they do not fly by night, and in any case they would not be present in that area in June. The ornithologists had no other feathery candidates to offer. Bonham and Blake mention this expert testimony (p. 207) without seeming to realize that it is fatal to their theory.

It should be added, however, that *at sufficiently short distances* it is undoubtedly true that birds *can* be detected on radar. Bonham and Blake give just one example of radar blips that could be correlated with visually-observed birds; in this case, the birds were "at considerably less than a mile." Indeed, at even shorter distances (up to a few hundred feet), even *insects* can be picked up on some short-wavelength radar sets, as both Bonham and Blake and Crawford have shown. Of course these short-distance observations have no real relevance to the problem of "angels."

In spite of their enthusiasm for

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the bird theory, Bonham and Blake are constrained to admit that "the characteristics of some of the many reports of 'phantom' targets may possibly require explanations other than those suggested here." Goldstein puts it more positively: "There seems to be a residuum of observations that cannot be accounted for by such explanations."

So much for mirages, "clumps of water vapor," birds, and insects. Can any other theory be devised to escape from the obvious conclusion that these "angels" must be some sort of Unidentified Flying Objects?

Disregarding purely amateurish suggestions such as "clusters of ionized air from atom-bomb tests" and "ball lightning," there is still one non-UFO hypothesis that deserves mention: floating radar mirrors. This idea was conceived by R. C. Borden and T. K. Vickers, two young physicists employed by the Civil Aeronautics Administration's Technical Development and Evaluation Center at Indianapolis, and was published in September 1952 in the C.A.A.'s mimeographed "Technical Development Report #180." This slim booklet, which was made available to the public at the time (though it is doubtless out of print by now) contains more detailed information on radar-angel observations than anything else we have seen.

In a large table, Borden and Vickers summarize 18 radar and 17 visual observations (mostly on maneuvering lights, but including some clear-cut daylight "saucer" sightings) from the Washington area alone. All but one of these occurred in the brief period between July 10 and August 16, 1952—the height of the great 1952 wave of saucer sightings. The authors also report briefly on "angel" observations from other CAA airport radar installations: they are seldom or never seen at Minneapolis, Atlanta, and New York, and rarely at Boston, but are frequent at Cleveland and Chicago, where they "occasionally form a nuisance problem," since it is hard to distinguish them from helicopters.

One sees from this table what one could not have learned from the newspapers: that after the well-publicized incidents of July 20 and 27, the angels *continued to be seen* on Washington radarscopes with undiminished frequency. On the morning of the 29th, a host of them in a belt fifteen miles wide passed over on a southeast heading, traveling at speeds of 90-120 miles per hour. This time no visual contact was made, and the CAA radar men, made prudent by their earlier experiences, did not notify the Air Defense Command. This incident, occurring just before Gen. Samford's press conference, "made the papers": AP in the Santa Fe *New Mexican*, UP in N. Y. *Post*, July 29. On the night of August 5-6, another such procession or host passed over—heading east-southeast, at an average speed of 38 miles per

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hour. At 2 p.m. on the 8th, three angels heading south at 60 mph; at 10:10 the next night, two heading east; on the evening of the 13th, sixty-eight objects heading southeast or south at speeds from 27 to 68 mph; on the night of the 15th-16th, a dozen, some following this path and some crossing it at right angles, at 24 to 52 mph. Further the CAA report (issued in September) sayeth not. Spectacular as were these sightings that occurred *after* the Air Force's press conference, none of them was mentioned by the newspapers.

Borden and Vickers deal principally with the 68 angels observed on August 13th-14th. For 16 of these, which passed over within an hour of a weather-balloon check on winds aloft, they found a striking correlation. Twelve of these 16 "targets" could be interpreted as objects moving with the wind at 8000 feet—*the altitude at which a small temperature inversion existed* —but at *twice* the wind's 25-mph velocity. They rationalized this discrepancy in speed in a very ingenious way: they interpreted the floating objects, not as direct sources of radar echo, but as horizontal radar *mirrors* (or lens-like atmospheric masses having the effect of mirrors) floating with the wind at the inversion level, in which the *ground* could be "seen" by the radar. In other words, they postulated that the "angels" were small, isolated, windborne spots of radar-mirage effect. The spot of reflected ground image on the radarscope would appear at *twice* the real distance of the floating mirror, and would seem to move at *twice* its real speed.

This pretty theory was of course given much newspaper publicity, although one may wonder whether the journalists understood wherein it differed (or indeed, that it differed at all) from the theory of generalized radar mirage that they had found so convincing a few months earlier. Of course none of the newspaper commentators noticed anything wrong with it.

It seems a shame to spoil a theory that dispatched twelve angels so neatly, but the fact is that it breaks down on all the rest. Four of the sixteen August 13th angels were southbound, and would have to be interpreted as windborne mirrors at 2000 feet—where there was no inversion. Of the six August 15th angels considered, only *one* could be interpreted as a windborne mirror at the "inversion layer" (there was an insignificant inversion at 900 feet); the speed and direction of the other five necessitated assigning them to other levels. Turning to the tabulation of radar-angel incidents, we find that on more than half of the occasions when angels appeared, *no inversion at all* was present! Whatever possible rationalization may have existed for the "mirror" suggestion disappears when it turns out that there is no connection between the height of

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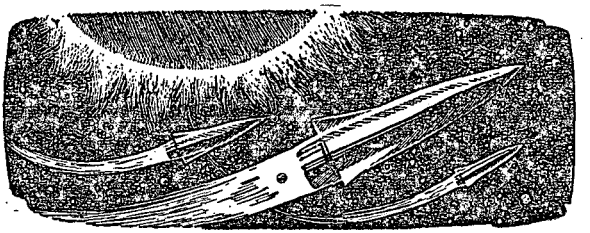
the postulated "mirrors" and the structure of the atmosphere.

The second drawback of the Borden-Vickers theory is that it is impossible. As Goldstein pointed out, there is definitely nothing known or imaginable in the normal atmosphere that can affect radar waves so drastically. "Although the exact nature of the discontinuity is not known," say Borden and Vickers, "one possible explanation might be that it is an eddy in the atmosphere produced by the shearing effect of dissimilar air masses at the inversion boundary . . . bulges or dimples in the inversion layer." This optimistic statement overlooks (a) the fact that, on the evidence they themselves present, the inversion layer has nothing to do with the observed phenomena; and (b) the theoretical demonstration by Goldstein, and the experimental demonstration by Crawford, that no matter what assumptions one makes, it is simply not possible to combine air and water vapor so as to produce any such effect on the radar beam.

We conclude that nobody has yet produced a "normal" explanation for radar angels that will stand up under the slightest serious examination—and that after all this time, it's scarcely likely that one will be produced in the future. In our simple-minded way, we suppose that the angels must, after all, be pretty much what they seem to be: some sort of unknown, luminous-at-night, intelligently-moving aerial bodies, often only a foot or so in diameter, and of some composition that is not easily visible by daylight at any great distance—evidently non-metallic. They show a gregarious tendency and like to travel in pairs and large swarms; they are interested in aircraft; although they don't usually travel very fast, they can outrun jets if they care to; and they certainly do not originate on the surface of this planet. In short, these angels must be something not too different from the aerial "jelly-birds" of our article on "angel hair." Perhaps, even, they are not different at all. It is pleasing to think—and it is by no means unlikely—that the source of "angel hair" may be, simply, "angels."



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the robot who wanted to know

by . . . Felix Boyd

Did he have a right to feel this way? Was this really forbidden by law—this wonderful frightening emotion!

THAT was the trouble with Filer 13B-445-K, he wanted to know things that he had just no business knowing. Things that *no* robot should be interested in—much less investigate. But Filer was a very different type of robot.

The trouble with the blonde in tier 22 should have been warning enough for him. He had hummed out of the stack room with a load of books, and was cutting through tier 22 when he saw her bending over for a volume on the bottom shelf.

As he passed behind her he slowed down, then stopped a few yards further on. He watched her intently, a strange glint in his metallic eyes.

As the girl bent over her short skirt rode up to display an astonishing length of nylon-clad leg. That it was a singularly attractive leg should have been of no interest to a robot—yet it was. He stood there, looking, until the blonde turned suddenly and noticed his fixed attention.

"If you were human, Buster," she said, "I would slap your face for being rude. But since you are a robot, I would like to know what

The possibility that robots, in common with certain humanoids, might in time share certain emotions with their creators, has been frequently considered. Here Felix Boyd returns with this sensitive short-short, based on our cover. (F. B. is the pseudonym of a prominent SF writer and editor.)

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your little photon-filled eyes find so interesting?"

Without a microsecond's hesitation, Filer answered, "Your seam is crooked." Then he turned and buzzed away.

The blonde shook her head in wonder, straightened the offending seam, and chalked up another credit to the honor of electronics.

She would have been very surprised to find out what Filer had been looking at. He *had* been staring at her leg. Of course he hadn't lied when he answered her—since he was incapable of lying—but he had been looking at a lot more than the crooked seam. Filer was facing a problem that no other robot had ever faced before.

Love, romance, and sex were fast becoming a passionate interest for him.

That this interest was purely academic goes without saying, yet it was still an interest. It was the nature of his work that first aroused his curiosity about the realm of Venus.

A Filer is an amazingly intelligent robot and there aren't very many being manufactured. You will find them only in the greatest libraries, dealing with only the largest and most complex collections. To call them simply librarians is to demean all librarians and to call their work simple. Of course very little intelligence is required to shelf books or stamp cards, but this sort of work has long been handled by robots that are little more than wheeled IBM machines. The cataloging of human information has always been an incredibly complex task. The Filer robots were the ones who finally inherited this job. It rested easier on their metallic shoulders than it ever had on the rounded ones of human librarians.

Besides a complete memory, Filer had other attributes that are usually connected with the human brain. Abstract connections for one thing. If he was asked for books on one subject, he could think of related books in other subjects that might be referred to. He could take a suggestion, pyramid it into a category, then produce tactile results in the form of a mountain of books.

These traits are usually confined to homo sapiens, they are the things that pulled him that last, long step above his animal relatives. If Filer was more human than other robots he had only his builders to blame.

He blamed no one—he was just interested. All Filers are interested, they are designed that way. Filer 9B-367-O, librarian at the university in Tashkent, had turned his interest to language due to the immense amount of material at his disposal. He spoke thousands of languages and dialects, all he could find, and enjoyed a fine reputation in linguistic circles. That was because of his library. Filer 13B, he of the interest in girls' legs, labored in the dust filled corridors of New Washington. In addition to all the gleaming new microfiles, he had

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access to tons of ancient printed-on-paper books that dated back for centuries.

Filer had found *his* interest in the novels of that by-gone time.

At first he was confused by all the references to *love* and *romance*, as well as the mental and physical suffering that seemed to accompany them. He could find no satisfactory or complete definition of the terms and was intrigued. Intrigue led to interest and finally absorbtion. Unknown to the world at large, he became an authority on love.

Very early in his interest, Filer realized that this was the most delicate of all human institutions. He therefore kept his researches a secret and the only records he kept were in the capacious circuits of his brain. Just about the same time he discovered that he could do research *in vivo* to supplement the facts in his books. This happened when he found a couple locked in embrace in the zoology section.

Quickly stepping back into the shadows, Filer had turned up the gain on his audio pickup. The resulting dialogue he heard was dull to say the least. A sort of wasted shadow of the love lyrics he knew from his books. This comparison was interesting and enlightening.

After that he listened to male-female conversations whenever he had the opportunity. He also tried to observe women from the viewpoint men, and vice versa. This is what had led him to the lower-limb observation in tier 22.

It also led him to his ultimate folly.

A researcher sought his aid a few weeks later and fumbled out a thick pile of reference notes. A card slid from the notes and fell unnoticed to the floor. Filer picked it up and handed it back to the man who put it away with mumbled thanks. After the researcher had been supplied with the needed books and gone, Filer sat back and reread the card. He had only seen it for a split second, and upside down at that, but that was all he needed. The image of the card was imprinted forever in his brain. Filer mused over the card and the first glimmerings of an idea assailed him.

The card had been an invitation to a masquerade ball. He was well acquainted with this type of entertainment—it was stock-in-trade for his dusty novels. People went to them disguised as various romantic figures.

Why couldn't a robot go, disguised as people?

Once the idea was fixed in his head there was no driving it out. It was an un-robot thought and a completely un-robot action. Filer had a glimmering of the first time that he was breaking down the barrier between himself and the mysteries of romance. This only made him more eager to go. And of course he did.

Of course he didn't dare purchase a costume, but there was no problem in obtaining some ancient

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curtains from one of the storerooms. A book on sewing taught him the technique and a plate from a book gave him the design for his costume. It was predestined that he go as a cavalier.

With a finely ground pen point he printed an exact duplicate of the invitation on heavy card stock. His mask was part face and part mask, it offered no barrier to his talent or technology. Long before the appointed date he was ready. The last days were filled with browsing through stories about other masquerade balls and learning the latest dance steps.

So enthused was he by the idea, that he never stopped to ponder the strangeness of what he was doing. He was just a scientist studying a species of animal. Man. Or rather woman.

The night finally arrived and he left the library late with what looked like a package of books and of course wasn't. No one noticed him enter the patch of trees on the library grounds. If they had, they would certainly never have connected him with the elegant gentleman who swept out of the far side a few moments later. Only the empty wrapping paper bore mute evidence of the disguise.

Filer's manner in his new personality was all that might be expected of a superior robot who has studied a role to perfection. He swept up the stairs to the hall, three at a time, and tendered his invitation with a flourish. Once inside he headed straight for the bar and threw down three glasses of champagne, right through a plastic tube to a tank in his thorax. Only then did he let his eye roam over the assembled beauties. It was a night for love.

And of all the women in the room, there was only one he had eyes for. Filer could see instantly that she was the belle of the ball and the only one to approach. Could he do anything else in memory of 50,000 heroes of those long-forgotten books?

Carol Ann van Damm was bored as usual. Her face was disguised, but no mask could hide the generous contours of her bosom and flanks. All her usual suitors were there, dancing attendance behind their dominoes, lusting after her youth and her father's money. It was all too familiar and she had trouble holding back her yawns.

Until the pack was courteously but irrevocably pushed aside by the wide shoulders of the stranger. He was like a lion among wolves as he swept through them and faced her.

"This *is* our dance," he said in a deep voice rich with meaning. Almost automatically she took the proferred hand, unable to resist this man with the strange gleam in his eyes. In a moment they were waltzing and it was heaven. His muscles were like steel yet he was light and graceful as a god.

"Who are you?" she whispered.

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"Your prince, come to take you away from all this," he murmured in her ear."

"You talk like a fairy tale," she laughed.

"This is a fairy tale, and you are the heroine."

His words struck fire from her brain and she felt the thrill of an electric current sweep through her. It had, just a temporary short circuit. While his lips murmured the words she had wanted to hear all her life into her ear, his magic feet led her through the great doors onto the balcony. Once there words blended with action and hot lips burned against hers. 102 degrees to be exact, that was what the thermostat was set at.

"Please," she breathed, weak with this new passion, "I must sit down." He sat next to her, her hands in his soft yet vise-like grip. They talked the words that only lovers know until a burst of music drew her attention.

"Midnight," she breathed. "Time to unmask, my love." Her mask dropped off, but he of course did nothing. "Come, come," she said. "You must take your mask off too."

It was a command and of course as a robot he had to obey. With a flourish he pulled off his face.

Carol Ann screamed first, then burned with anger.

"What sort of scheme is this, you animated tin can? Answer."

"It was love dear one. Love that brought me here tonight and sent me to your arms." The answer was true enough, though Filer couched it in the terms of his disguise.

When the soft words of her darling came out of the harsh mouth of the electronic speaker Carol Ann screamed again. She knew she had been made a fool of.

"Who sent you here like this, answer. What is the meaning of this disguise, answer. ANSWER! ANSWER! you articulated pile of cams and rods!"

Filer tried to sort out the questions and answer them one at a time, but she gave him no time to speak.

"It's the filthiest trick of all time, sending you here disguised as a man. You a robot. A nothing. A two-legged IBM machine with a victrola attached. Making believe you're a man when you're nothing but a robot."

Suddenly Filer was on his feet, the words crackling and mechanical from his speaker.

"I'm a robot."

The soft voice of love was gone and replaced by that of mechanical despair. Thought chased thought through the whirling electronic circuits of his brain and they were all the same thought.

I'm a robot—a robot—I must have forgotten I was a robot—what can a robot be doing here with a woman—a robot can't kiss a woman—a woman can't love a robot—yet she said she loved me—yet I'm a robot—a robot. . . .

With a mechanical shudder he turned from the girl and clanked

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away. With each step his steel fingers plucked at his clothes and plastic flesh until they came away in shards and pieces. Fragments of cloth marked his trail away from the woman and within a hundred paces he was as steel-naked as the day he was built. Through the garden and down to the street he went, the thoughts in his head going in ever tighter circles.

It was uncontrolled feedback and soon his body followed his brain. His legs went faster, his motors whirled more rapidly, and the central lubrication pump in his thorax churned like a mad thing.

Then, with a single metallic screech, he raised both arms and plunged forward. His head hit a corner of a stair and the granite point thrust into the thin casing. Metal grounded to metal and all the complex circuits that made up his brain were instantly discharged.

Robot Filer 13B-445-K was quite dead.

That was what the report read that the mechanic sent in the following day. Not dead, but permanently impaired, to be disposed of. Yet, strangely enough, that wasn't what the mechanic said when he examined the metallic corpse.

A second mechanic had helped in the examination. It was he who had spun off the bolts and pulled out the damaged lubrication pump.

"Here's the trouble," he had announced. "Malfunction in the pump. Piston broke, jammed the pump, the knees locked from lack of oil—then the robot fell and shorted out his brain."

The first mechanic wiped grease off his hands and examined the faulty pump. Then he looked from it to the gaping hole in the chest.

"You could almost say he died of a broken heart."

They both laughed and he threw the pump into the corner with all the other cracked, dirty, broken and discarded machinery.

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universe in books

by... Hans Stefan Santesson

Recent material on Ufology —mystical as well as less mystical — and other books of interest to SF readers.

LEONARD H. STRINGFIELD, Director of CRIFO and editor, for several years, of *Orbit*, reports on the status quo of Ufology in his recent and extremely interesting INSIDE SAUCER POST . . . 3-0 BLUE (CRIFO, Cincinnati). Stringfield, "summarizing everything from angel hair to zodiacal lights" (subjects familiar to readers of our monthly CSI columns) has "come to the conclusion that flying saucers are interplanetary vehicles and that the world governments with technological know-how also believe this to be the answer. This answer," he continues, "however for one or several reasons is being kept from the world public."

Len Stringfield, in common with other researchers in the field, found the analysis and evaluation of UFO sightings and reports taking more and more time to the eventual exclusion of all other activities. This contributed to the decision to suspend *Orbit* and to, once this informal report on CRIFO's activities was done with, gradually lessen activities in the field, a decision which is to be regretted because Stringfield brings to the field a sophisticated objectivity (I can hear

A report on a number of books which may interest—and may also irritate —many of you—and on a delightful anthology of SF stories which this column enjoyed. Those not interested in UFOs are urged to immediately turn to the final review, unless their curiosity gets the better of them....

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some friends on the West Coast chuckling at this possibility in Ufology) and a balanced approach, both of which are increasingly rare. This little book, available for $2.50 from CRIFO, 7017 Britton Avenue, Cincinnati 27, Ohio, is definitely worth getting if you are interested in an over-all survey of the field and of the thinking of the men and the women who are attempting to find the answer of this question of the identity of the UFOs.

Dr. Leon Davidson, formerly with the AEC and who believes that the Saucers are American-made and controlled, has published a second edition of his FLYING SAUCERS, available for $1.50 from 64 Prospect Street, White Plains, N. Y. An important reference item, the 96 page brochure contains an appendix consisting of a photo offset copy of the full text of the Air Force Project Blue Book Special Report No. 14, dated May 5, 1955, and some of the important figures and tables from that report.

Those who remember Dianetics may be interested in an article by L. Ron Hubbard, FORTRESS IN THE SKY, originally published by *Air Trails* in 1947, which has been reprinted by The Hubbard Association of Scientologists, International, Box 242A, Silver Spring, Maryland. The Association includes "Founding Church of Scientology of Washington," "Church of American Science," "Hubbard Dianetic Research Foundation," etc. Mr. Hubbard, author of this article on the military aspects of the moon in an atomic age, is described as "one of the prime movers" in this country "in the effort of getting man out into space," as a designer of rockets and as a leading writer of science fiction. "He has developed the psychology of space in Scientology."

Gavin Gibbons, author of THEY RODE IN SPACESHIPS (Citadel, $3.50), has, we are told, applied his critical faculties to the stories of Daniel Fry and Truman Bethurum, two contactees in this country—that is men who have allegedly been in contact with extra-terrestrials, visiting here in Flying Saucers. Mr. Fry is the man who was taken in a *Vimana* or scout ship from New Mexico to New York and back in slightly more than thirty minutes, never seeing the pilot, Aylan, who spoke to him by means of vibrations in his head. Truman Bethurum (also discussed in Isabel Davis' article, MEET THE EXTRATERRESTRIAL, in our November 1957 issue) is famous for his meetings with the beautiful Captain Aura Rhanes from Clarion, "a satellite beyond our moon."

Mr. Gibbons is to be congratulated on his ability to put together as effective a case for the two men as he does, considering that he did this without meeting them. Just as he accepts one English contact case and Mr. Adamski, Gibbons, reading the accounts of a number of people

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who claimed to have ridden in spaceships, found some of them to be fantastic nonsense but the stories of Fry and Bethurum to be of "a very different calibre." No comment.

Stringfield quotes the following anecdote about some people, in Pennsylvania, who obviously were *not* prepared for Space Visitors. . . . In July of 1940 a neighbor's hired hand saw what looked like an aluminum dishpan going up the narrow valley. He grabbed his pet goose and ran into the house and hid. They sent him to the insane asylum for treatment (as happened quite recently in Nebraska). Two miles further up the valley another young man saw it and told his wife. She told him he was crazy—so he took his rifle and blew his head off. . . .

Recently, in the course of a rather lengthy rejection (promptly interpreted—and interpreted wrongly—as a policy rejection) of a long article, a reply by one of the contactees discussed in Isabel Davis' above-mentioned article, I had occasion to regret the vagueness and lack of documentation of much of contactee writings. I wrote that one day the contactees, the men who have allegedly been in physical or telepathic contact with extra-terrestrials, *might* make converts, but this would not happen "so long as rather disturbing mystical trappings are borrowed by some contactees from Madame Blavatsky and others, and so long as contactdom (if I may use this word) is so unfortunately represented. Present," I continued, "clearly stated facts, dates, affidavits, photographs if possible. Permit neutral observers at anticipated contacts." *Then* they might have their converts!

To a limited degree, John McCoy's curious THEY SHALL BE GATHERED TOGETHER (P.O. Box 3433, Corpus Christi, Texas), illustrates what I had in mind. McCoy, who has been described to me by a usually rather unemotional person as "almost Christlike" in his appearance, has become one of the more articulate of the spokesmen for the mystical approach to Ufology. Quoting St. Mark XIII, "Watch ye therefore, for ye know not when the master of the house cometh," McCoy, while considerably more charitable towards some of his fellow contactees than this writer would be, does make something of a case for those who feel that a New Age is at hand.

McCoy is identified as a member of the Abbey of the Brotherhood of the Seven Rays at Lake Titicaca, in Peru. Aramu-Muru, Abbot of the Brotherhood (and a young student at the time of the submergence of Mu) declares that "the authority of the Brotherhood of the Seven Rays is obtained only from The Ever Living Christ, Sananda, Jesus the Christ." He traces the origin of the Brotherhood "back many thousands of years to the post-Lemurian era,"

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and states that it "is in close association with Master Koot Hoomi Lah (Lal) Singh at Shigatse, Tibet, and with the master teacher of the Great White Brotherhood at Mt. Shasta, California." (!) Readers familiar with the mystery of the golden city in Brazil, hunted by Colonel Fawcett, and identified by H. T. Wilkins in his curious MYSTERIES OF ANCIENT SOUTH AMERICA (1956, Citadel) as one of the cities of an Atlantean white race, will find the report of an Abbey-sponsored expedition of particular interest. It is stated that in South America there existed, side by side with Atlantis and Mu, a third great civilization whose records "are well preserved in their final resting places in the vast libraries of forgotten 'Paititi.'"

There is a temptation to dismiss John McCoy's THEY SHALL BE GATHERED TOGETHER as a more credible but still not convincing addition to the growing amount of quasi-Christian Metaphysical contactee literature, and this would be justified. There are, however, elements in this interesting little book *(Please! To say a book is "interesting" does not imply acceptance of what it says!)*, elements singularly absent in the considerably smoother —I might almost say glibber— accounts of other contactees.

Photographs in the European press show the "robot vehicle" (as it was first identified) referred to in this month's editorial, to be a tank, with TV and measuring equipment, controlled by radio from the earth satellite. The pictures taken by the tank's cameras would be transmitted to and developed in a laboratory on the satellite.

The Russian satellite obviously brought with it certain legal problems including the necessity for defining just who controlled the space through which the sputniks and later satellites would move.

Professor John Cobb Cooper, former Director of the Institute of International Law at McGill, had already stated, at the 1956 Meeting of the American Society of International Law, that there was obvious need for a treaty to clear up uncertainties. As pointed out in a paper read at the Dec. 1957 Annual Meeting of the American Rocket Society, he suggested that the subjacent state (i.e., below the space in question) have "full sovereignty in the areas of atmospheric space above it, up to the height where aircraft as now defined may be operated, such areas to be designated 'territorial space'"; that the sovereignty of the subjacent state be extended upward to 300 miles above the earth's surface, this area to be called "contiguous space," the right of transit to be provided for all "non-military flight instrumentalities, when ascending or descending" through this zone.

All space, above the contiguous space, should be considered "free for passage of all instrumentalities," he went on.

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The Russian experiences, and eventually our own, will of course prove the need for revision of these estimates of how far up "contiguous" *does* extend . . ."

It is almost a relief to turn from the above to the thoroughly delightful stories by Richard Wilson, THOSE IDIOTS FROM EARTH (Ballantine, 35 cents), which cannot be recommended too highly. Wilson, who will be remembered for his excellent THE GIRLS FROM PLANET 5 (Ballantine, 35 cents), turns a rather ironic eye on that possible World of Tomorrow in several of his stories, HONOR, IT'S COLD OUTSIDE, and in the sensitive LOVE.

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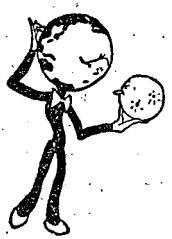

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i've got your wavelength

by . . . P. H. Booth

What was the truth about Ham Piper and his strange and unearthly hypnotic power over everyone who came near him?

I GROANED when the boss told me I was supposed to do a photo-interview on Ham Piper, the teen-agers' latest swoon boy.

"Have a heart, chief! Think of my ear-drums. You know I'm strictly a Lawrence Welk square myself!"

"Nonsense! You know nobody can shoot sound waves like you can. And you just might snag another award, you know!"

He was referring to the bronze plaque I received the year before for photographing the human voice at the American Communications Show.

Ham used to be plain Jack Piper, but some columnist compared him to the Pied Piper of Hamelin, when he first became so popular, and the youngsters christened him "Ham" for short.

He dabbled in the use of echo chambers and queer electronic gadgets, whose names I can't spell without looking in an engineering encyclopedia. He was even rumored to be dickering with Cal-Tech to get one of its outmoded electronic brains. When we tried to check on the report, though, the scientists scoffed at the story as something

Californian P. H. Booth, a free-lance writer since his first sale to the old Breezy Stories, *has sold to such widely different markets as* Industrial Editor *and* The Catholic Miss. *He recently joined a SF writers group in the South Bay area and is now extremely interested in the field.*

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Ham's press agents had dreamed up.

As it turned out, I did get an award for the pictures I took that night. Now I like an award as well as the next guy, but these were a group of pictures, I wish I wouldn't keep seeing night after night when I'm trying to get to sleep without a tranquilizer.

Ham had let me cool my heels in the hall for an aggravating length of time, before he'd see me. I have to admit he wasn't a bad-looking boy, but he had an arrogant way that burned me up, and a vague, hopped-up look in his eyes that gave me the creeps. The one big gold-hoop ear-ring dangling on the side of his face didn't help any either.

I asked him the questions that are probably standard for celebrity interviews,

"What do *you* think makes you such an idol, bigger than Johnny Ray and Crosby, or even Caruso?"

"Oh *them*!" He dismissed the famous names with a shrug. "I'm not just a crooner, you know. With my music I can make anybody do just about anything I want them to—anything!"

"But how?" I prodded.

He grinned. "Trade secret," he said, and then condescended, "Let's just say I get their wavelengths—"

That was all he'd say. He made it quite clear that the visit was over.

When I pushed my way through the groups of young squirts carefully arranging their duck tails in the mirrors, the joint was jumping. Ham mounted the platform. He was in top form. First he'd sing, then screech on the clarinet for a while, or pound the drums. And all the time, the kids would watch *him* and sort of quiver, their eyes glazed and strange. I spotted a table with five young couples around a huge birthday cake. They all looked somehow out of place, scrubbed and wholesome, like the pictures they use when they want to prove that the youngsters nowadays aren't a bunch of delinquents after all. But when I looked at them more closely, they all had that same queer hypnotized look. When the music stopped I walked over to them.

"Mind if I take a shot of your party? It's for 'Today.'" I knew the name of the magazine would get them. They were tickled to death to pose. I got a fine picture of Eadie Blair, the guest of honor. She was a real beauty. She told me her folks were letting her celebrate her eighteenth birthday by having this party at Ham's. I was getting a good interview, when Ham started up again.

I had to ask, "Honest, Eadie, what is it you like about this noise?"

They all shook their heads and laid fingers to their lips with a look of utter loathing for me, the square, the interloper. They turned back to Ham, their mouths open, their bodies trembling, their eyes strange.

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Eadie pushed back her chair. "I want his autograph, do you mind, Jim?" She was gone without waiting for his answer, her heels tapping toward the platform, then on down the hall, where we could see Ham heading for his dressing room.

I tried to get some of the other kids to talk, but they all seemed wary. Jim especially kept looking down the hall, his face first puzzled, then grim, as the minutes ticked on. The rest of them tried to chatter brightly in their indistinguishable gibberish but their forced hilarity didn't quite hide the uneasiness.

Jim got up, hesitated for a second beside his chair, then strode down the hall. He knocked on the door with a star emblazoned on it.

"Eadie," he called, "the gang wants to leave—you ready?"

There was a murmur behind the door and Ham said, "Run along little boy—"

Jim clenched his fist, the knuckles white.

"Let Eadie tell me!" His voice tried to be manly and firm, but it quavered to a hoarse mutter.

"All right, let's ask the lady. You want to stay, Eadie?" Ham's contempt for interference cut through the door.

"Yes, Jim, don't wait," Eadie's whisper was low but clear. "Will you tell the others?"

Jim didn't go back to his table. I saw him plunge out into the back alley, his head bent low.

I had a sudden surge of anger. I wanted to rush in and pull the silly child out by her red-gold hair, but—what was the use? They were all so utterly incomprehensible to me, and I—in their eyes I was just a square.

I wandered through the cafe, shooting pictures of couples in an almost embrace, couples dipping shrimps languidly into spicy sauce, couples glassy-eyed in some dream world of their own.

Then Ham came back to the platform, his face arrogant, his step springy.

One of the group must have been worried enough to call Eadie's home. Not long afterwards, a well-dressed middle-aged man, pushed his way through the cafe, towards Ham's dressing room. His face black with anger, he pounded on the door, calling his daughter's name. It was flung open and Ham stood there, smiling and utterly unconcerned. Beside him was Eadie, her face a shamed red.

"Eadie, what has he done?"

"Nothing she wasn't in favor of," Ham boasted.

"I'll have you jailed, you filthy pup!" the father shouted.

"Try it," Ham dared him. "This is her eighteenth birthday, remember? Besides, she came in here of her own free will, ask her if you don't believe me."

"Eadie, is this true? Tell me he's lying!"

She hung her head and whispered only, "No—take me home, daddy just take me home!"

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That was the picture I took, and which I kept seeing night after night unless I took a sleeping pill.

Blair tried to prefer criminal charges against Ham, but it didn't do any good. We learned later that he had sent his daughter to a sanitarium in the desert, where the grounds were beautiful, but they had good strong bars around the windows.

The episode seemed only to set Ham's vogue with the youngsters higher and higher. He still rode around in his low slung car, the one pirate ear-ring dangling defiantly in his left ear. He was constantly pursued by jalopies filled with teen-agers begging to do his bidding, and begging for autographs. He even used copies of my sound-wave pictures in his ads. "What is Ham Piper's wavelength, tune in and find out!" the bill-boards screamed.

The Youth Welfare groups and the PTA's worked hard to do something, but if they managed to have Ham banned from one community, he'd only hire an old barn or a shack somewhere else, and the kids would gather from miles around.

Within a month, the police cut Eadie's young friend Jim down from the rafters in the family garage. He left a note: "I should have killed Ham Piper that night. I didn't, so there's nothing to do but kill myself."

There came a flood of protest in the public press. Editorials thundered, TV commentators roared, ministers pounded their pulpits, and demanded that something, anything, be done to stop Ham Piper. But they found that there was actually nothing they could do, legally, that is. If Ham and his music were driven out of one town, he merely moved to some other spot, where a sheriff was more indulgent towards anyone who drove a ten-thousand dollar car and carried a fat roll of bills. Wherever he went, the kids found him, through some whispering campaign of their own, even though he didn't place so much as a one-line ad in the paper.

The hubbub might have died down, only Ham wouldn't let it. The next thing we knew he put a full-page in all the big city papers, including our sheet. He threw down a challenge! In extra bold type, he dared the professors, and the religious leaders, and the club women who were shaking their heads over him to attend his next show. And if he couldn't make them react just the way their children did, the check for dinner and drinks was on him—*personally!*

The chief thought it was merely another press agent's brain storm. But he sent me to interview Ham just the same. That's one thing about the boss, he never overlooks a good story bet.

When I faced Ham Piper in his dressing room, I began to feel a strange, almost atavistic fear. This wasn't only a modern jazz musician

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with the usual good-natured contempt for long-hairs. Ham Piper, I realized, really planned to rule the world, with the weird, dissonant sounds he evoked. He didn't even try to hide the hatred he felt for those he couldn't quite control—*yet.*

I didn't believe for a minute that the university professors, commentators, and editors would pay any attention to Ham's challenge, but I couldn't have been more wrong.

First there was Prof. Langley of the Chair of Anthropology at California, who had just published a profound treatise on "The effect of jungle drums on the social mores of the aborigines of South America." He picked up Ham's gauntlet, and fast.

"Having studied voodoo and the methods of magicians and witch-doctors throughout the primitive world, I'm afraid our self-styled priest of jazz will have little effect on me. But professor's salaries being what they are, I'll be most happy to be Mr. Piper's guest," he announced in a letter to the press.

The publisher of our rival news chain, Duane Miles Cayne, who featured editorials on wholesome family life, next to the most lurid love nest photographs, was next in line to accept Ham's invitation. He did this in a thundering full page editorial which he ended with his own flourishing signature. How could this young pip-squeak *presume* to defy people of standing in the community just because his two-penny whistle titillated the nerve ends of a few misguided youngsters!"

The chief said, "Well, this is either the doggonedest publicity gag ever pulled or—"

"No, he really means it—he's not fooling one bit!" I insisted.

"In any case, I want you to cover it. Get your shots of the sound waves and a picture interview with Ham before he goes on. Should make a whale of a yarn."

I have to admit, Ham Piper put it over. I thought I'd be in plenty of time if I got there around six, he never started his show until nine. I had to plow through the darndest assortment of big domes you ever saw to get to his dressing room.

Besides Prof. Langley, there were Dr. Hepner, from U. C. Medical, Dr. Sampson, the outstanding Doctor of Psychiatry, had flown in from Johns Hopkins, and even Duane Miles Cayne appeared with an entourage of secretaries and yes men.

Being a news photographer for so many years has made me a pretty hard-boiled sort of a guy. I had taken the precaution of buying a pair of ear plugs, the extra strong kind the skin-divers use off La Jolla.

But when Ham seated himself beside the gleaming metal computer with its myriad of buttons winking and blinking, I felt a prickle of naked fear down my spine. I saw that he hadn't contented himself with acquiring one of the outmoded types, either. This was the

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very latest in electronics, its workings still held top secret by the military brass.

When Ham began to draw music from it, my nerves drew tight as a violin string, and I sensed mysterious, ancient emotions bubbling deep inside of me. I almost wanted to push up to the platform along with his other dupes, to do his bidding, no matter what he asked of me.

But I was really amazed when I saw Cayne shouldering his way through the crowd, his eyes wide and glassy. His yes men tagged along obediently in his wake, their faces a mirror of Cayne's enthrallment.

"Wonderful, my boy, wonderful," Cayne beamed into Ham's mocking face. "Must have you out on my yacht the first week-end you're free. Just name the day, son, just name the day!"

Ham shrugged, "I don't know, but if you want to send your private plane for me, say three weeks from tonight, I'll send word to the pilot whether I want to come!"

"That's fine!" Cayne turned to one of his henchmen. "Make a note of that!"

"Yes sir!" The assistant scribbled furiously, his eyes wide in utter amazement.

"But tonight—isn't there something I could do for you right now—to show my friendship?"

Ham Piper grinned and dug his hands into his pocket, dragging out a flattened, empty cigarette package. "I seem to be out of my brand, get me a pack, will you?"

"Right away, my boy, right away!" He turned to another of his entourage. "Get a carton of these cigarettes, hurry!"

"Just a minute!" Ham's voice was crisp. "I want *you* to get them, not your flunky!"

For a moment Cayne stared back at Ham. Then his huge bulk seemed to shrivel inside his handsomely tailored suit.

"Right away," he whispered and turned towards the door.

Ham chuckled, and seated himself beside the huge mechanical brain. He began to coax discordant, but somehow haunting chords from it, while the orchestra wove a muted background. His audience sat with their stupid mouths wide open, in glazed enchantment.

I was glad I had put in my ear plugs. They deadened somewhat at least, the shrill scream of a woman. I turned to see Eadie's father shouldering his way through the mob, a gun in his hand, and rage contorting his face. He seemed not to hear a note of Ham Piper's music. I saw a frail, middle-aged woman trying to hold him back. I knew she was Eadie's mother, and that it was she who had screamed,

"Don't Ed, don't! You'll only make it worse. I can't stand any more, I can't!"

He flung off her hands.

"I've got to stop him, can't you see?" He faced the crowd. "You fools, don't you see we have to

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stop him? Can't you see what that fiend is doing?"

But all he got for an answer was a muttered "Sh—Sh!" which swept through the cafe.

Ham was pressing wildly at the buttons on the computer, glorying in the weird sounds he was producing. His face was insane with contemptuous power. As he played, he glared at Ed Blair.

I certainly didn't want to see murder done, and yet I felt a cold sickness when I saw Blair begin to fall back from the wave of sound, as if he were pitting his puny strength against a tornado.

Blair tried to stare back into Ham's dark eyes, but the music seemed to hypnotize him into impotence. Ham signaled the two special officers at the door. I whirled my camera towards Blair, just in time to catch a shot of him, struggling in the guards' grasp, tears running down his tortured face.

I needed several crowd poses for fill-ins, and I took a few pan shots of various faces at the tables. I trained my camera on the electric brain again, with Ham's face barely visible above it. The music grew wilder and wilder, its crescendos mounting to an unbearable pitch. I shot again. Suddenly the music roared into an ear-splitting screech, and just as suddenly, there was silence. The lights went up full. The spectators were on their feet, cheering, clapping and stamping. This was the time Ham usually took his bows, turning away again and again, so that his audience could call him back.

But this time, he didn't come forward. Voices began to buzz excitedly throughout the room. The MC tried to calm the crowd. Ham'd be right back. He had only stepped out for a moment. But the MC's face was utterly bewildered, too. He slipped down the hall and tapped on Ham's door. There was no answer.

"Force it," someone cried, and the policemen put their burly bodies against the door until it crashed open, but there was no one inside.

"Ed Blair!" a voice accused. "He had a gun!"

But his alibi was in my camera, Ham was still playing while Blair had struggled in the grasp of the officers.

As to Ham's disappearance, I don't know. All I am sure of is that when I developed my films, and came to the last shot, Ham's head didn't appear at the top of the computer at all. But over in the upper right hand corner of the picture there are a very few faint white lines scrambled together without rhyme or reason, circled by the gleam of a hooped, pirate ear-ring.

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calling all aliens

by . . . Jack Lewis

Impossible! Krith couldn't be an alien from Carinae III—or could he? Anyway, what should an alien look like?

CHUCK HODGES allowed the final page of THE VIRGINS OF SIRIUS SIX to drop on the desk. He yawned.

"This June cover," the man at the drawing board said. "You want the words "Science Fiction" in big type or in small type?"

Hodges ignored the question by hammering the back of his hand against the seventy-nine pages of manuscript. "One original idea," he said wearily. "That's all I want, Jeff. Am I asking for too much?"

The man called Jeff studied the editor over a cover layout that embraced a humanoid figure in standard space regalia standing amid an alien landscape which was tinted bright orange by the light from three suns.

"Depends on what you mean by original," he said. "Sometimes I wonder if there's an original idea left in science fiction anymore."

The editor raised an eyebrow. "You think maybe that's what accounts for our decline in circulation?" he asked almost-hopefully.

Jeff Morrison moved his shoulders. "Could be. But I think it's more that the readers know pretty much what to expect from a science

This story poses a problem. Do SF editors really believe in what they publish? And, for that matter, do SF writers believe in the new worlds (brave or otherwise) which they write about? Jack Lewis, former New Yorker now living in Kansas City, returns with this challenging idea.

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fiction story nowadays. It's different than it was back in Burroughs' time."

"Different?"

"That's right. Back around the turn of the century this thing was reasonably new. And because it hadn't been done too often, people didn't mind wading through fifteen-thousand words of buildup just to find out what it looks like on Sirius VI. . . . But now it's different. Now—forty or fifty thousand stories later—almost anything the author has to say about Sirius VI is bound to be sheer duplication. . . . Oh sure, there's always readers who'll buy anything, and more readers who'll buy a book just to see if they can catch the writers in a mistake. Trouble is, they're not enough to support all the magazines that are currently on the market."

"Tell me, Jeff," the editor said. "Just what *is* it like on Sirius Six? Oh, I don't mean Sirius Six specifically. I mean any alien Earth-type planet?"

Jeff Morrison spread out his hands. "You name it, boss, and we've probably had something on it one time."

Chuck Hodges nodded. "Exactly. We've had carbon life-forms, silicon life-forms, aliens made out of gas, aliens made out of sheer energy, and unspeakable monsters so horrible that the authors wouldn't ever dare speak about them. But when are we going to get something *new*?"

"How about real life people?" the assistant suggested "Would that be too outlandish?"

"We've had that too!" the editor snapped. "Many, many times."

"Not *real-life* people. Oh sure, we've had lots of humanoid aliens. Trouble was they were either godlike creatures who had evolved beyond—and therefore were powerless against—Earthman's grasping tendencies. Or else they were psychological deviants who weren't fit for any better fate than to die like dogs under a burst of fire from the Earthmen's proton blasters."

"Well naturally. That's what makes conflict. You've got to have conflict in a story!"

"But suppose the aliens were here—right here among us. And suppose they were wanting to contact us but were uncertain as to what kind of reception they'd get. So they go to the only source that contains this sort of information—the science fiction magazines."

"So?"

"So what do they find out? I ask you? Every story we print portrays the aliens either as a bunch of totalitarian stinkers, or a cult of holier-than-thou supermen!"

Chuck Hodges began gathering up THE VIRGINS OF SIRIUS SIX and shoving the pages into a manila envelope. "Why tell me," he said. "I don't write the stories. I just buy them."

"You said you were looking for an idea?"

"So, I'm still looking for an idea."

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"All right. So consider this: Suppose—just suppose—that aliens are already here. Has anyone ever *asked them* to make contact?"

Chuck Hodges made a noise with his nose.

"Well have they?"

"Of course not. Why should—"

"Then why don't you do it, boss. Play it up big on this month's editorial page. . . . Write it up as if they're already here and apologize for any false impressions STRANGE WORLDS might have given them as to the warmth of their reception. End it up by inviting them to set up an initial meeting here at the STRANGE WORLDS editorial offices."

Chuck Hodges waited till his assistant had gone home. Then he crossed the room and carefully examined the cover design which was still tacked to the drawing board. He nodded with approval. The alien landscape looked unusual but not outlandish; the space-suited figure, authentic but not too stereotyped.

There was no denying that Jeff Morrison had a big future ahead of him and Chuck Hodges was happy in the knowledge that he had contributed something toward it. He hadn't had to give the boy a chance when he walked into the STRANGE WORLDS editorial offices a year ago.

Of course, the boy still had a lot to learn. But most of his shortcomings stemmed from the fact that he was young yet and inclined to be a bit rash.

Like that crazy idea about inviting the aliens to visit the editorial offices.

Wow! Wouldn't the fans have a field day over that.

Hodges took care of a few more details, locked up the office, and stepped into the homey quiet of the suburban Long Island street where he'd rented a building after reduced profits had forced him out of New York's high-rent district.

He'd felt badly about the move at first—as if the move had been a step backward—but now he'd rather grown to like the tree shaded sidestreet and the frame building that was flanked by sturdy elm trees.

He'd gone less than a block when he began to wonder what he'd put on the June editorial page. That was the trouble with editing a magazine. You took your troubles home with you.

Of course he could always whip up something on ESP, or possibly another rehash on the space satellite.

But it sure would be refreshing to come up with something *new*.

Ten minutes later he was back in the office again.

Carefully he removed the cover from the typewriter, inserted a sheet of paper, and began typing.

"CALLING ALL ALIENS!" he wrote.

The June issue of STRANGE WORLDS hit the newsstands on

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the fourth of April. On April sixth the letters started; on April seventh they were pouring in.

And by the middle of the month over 800 letters had been catalogued and filed away.

Of these thirty-seven spoke of the editorial as a good idea. The balance denounced Chuck Hodges in terms that started with the word "Crackpot" and worked on down.

On April 22 the rival magazine DEEP SPACE came out with a cover that portrayed a caricature of Chuck Hodges standing on a sphere marked "Earth" and shouting into space through a megaphone. An accompanying editorial lampooned STRANGE WORLDS unmercifully and accused it among other things of joining the lunatic fringe.

"I'm sorry, Mr. Hodges," Jeff Morrison said. "It just goes to show you that people aren't ready yet."

The editor glowered over page 51 of THE VIRGINS OF SIRIUS SIX which he was preparing for the July issue. "Ready for what?" he inquired coldly.

"For the aliens," Jeff said blandly. "Just suppose there were aliens here on Earth. Do you suppose they'd show up after the way people have been acting?"

The editor withered his assistant with a look of exaggerated patience. "Tell me, Jeff," he said quietly. "Do . . . you . . . really . . . believe . . . in . . . *aliens*?"

"I don't disbelieve in them," Jeff answered promptly. "I think people should keep an open mind about them."

"I've tried to keep an open mind about them," the editor said. "And look what happened."

"I know," the assistant said. "And I'm sorry."

There was a soft, almost-experimental knock on the door.

Hodges grunted.

The door opened and a man walked in. He wore a checkered peak-cap and an orange shirt with large white flowers that hung outside a pair of tweed Bermuda shorts.

"My name is Krith," the newcomer announced. "And I am from the third planet in the system of Carinae."

"I'm sorry," the editor said stupidly. "I didn't catch the name."

The alien crossed the room and edged one side of his rump on the desk. "Krith," he said matter-of-factly. "K-R-I-T-H. That's phonetic spelling, of course. Translated literally it means: Son of a whiskey salesman."

Hodges exchanged a quick look with his assistant. "Well, what do you know," he said. "One of the Krith boys. Tell me Krith, does your father stock Kentucky bourbon?"

"My father is retired," the man in Bermuda shorts answered promptly. "On Carinae III a whiskey salesman is retired on a government pension after approximately eighteen Earth years."

The editor began to tap his fin-

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gers on the edge of the desk. "Tell me," he said with obvious restraint. "Is the elder Mr. Krith with you, or is he spending his retirement on Carinae III."

"He's on Carinae III," Krith said, "of course."

"Of course," Hodges said. "But suppose he weren't retired? *Then* could he get me some Kentucky bourbon?"

The man on the desk pursed his lips thoughtfully. "I'd imagine he could. Naturally, I couldn't say for sure. But on Carinae III it is the policy of the better whiskey salesmen to stock merchandise from the more remote sections of the galaxy as well as from neighboring star systems. . . . Naturally the price on this sort of thing would be quite expensive, you understand."

"Naturally," Hodges agreed. He motioned to his assistant who was regarding the proceedings with frank curiosity.

"Get this character out of here," he said crisply.

Jeff Morrison didn't budge.

"I don't think we should do that, boss," he said.

"Oh don't you, really?"

"No, sir. At least not till we find out if he really *is* an alien."

"Him! An alien? Oh come off it. You don't think he really is from—from—from—"

"From Carinae III," the man in shorts supplied.

"Look at him!" Hodges screamed. "Does he *look* like he comes from another star system?"

"I don't know," Jeff Morrison said. "How does someone from another star system look?"

"All right. So let's be practical. The point is—"

"The point is," the assistant interrupted, "that you ran an editorial that bid welcome to any alien who wished to contact you in the editorial offices of STRANGE WORLDS. So until we prove beyond a doubt that Mr. Krith is an impostor I think we owe him the courtesy of assuming that he's what he claims to be."

Chuck Hodges frowned. Deliberately he turned toward the flabby figure of the man in Bermuda shorts who was in the act of lighting a singularly Earth-type cigarette. He bowed.

"My humblest apologies, Mr. Krith," he announced with thinly veiled sarcasm. "Rest secure in the knowledge that my assistant and I have no doubts whatsoever that you are a true bonafide resident of Carinae III."

The self-confessed alien nodded gravely.

Jeff Morrison coughed.

And from somewhere near the door a voice said: "Is this really on the level, Mr. Hodges?"

Hodges wheeled toward the door which had been left ajar at the time of Krith's dramatic entrance. The man standing in the threshold was rail-thin. He had blue eyes and gray hair that was just beginning to turn gray at the temples. He wore gray

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gabardine trousers and a pinstripe sport jacket.

"Who the hell are you?" Hodges demanded. "The virgins of Sirius Six?"

"Hardly," the man in the doorway said drily. "I'm McCarthy from Universal News Service."

Chuck Hodges' mouth opened and closed four times in an outburst of silence. Then the reporter jerked an index finger at Krith.

"You say this guy's an alien—from where?"

"From Carinae III," Krith supplied. "Actually I've been here some time but—"

"I'm not asking you," McCarthy snapped. "I'm asking him!"

"Well, you see we ran an editorial," Hodges said.

"I know that, Mr. Hodges. That's not news anymore. What I want to know about now is him."

"What about him?"

"Is he—or isn't he?"

"Is he or isn't he what?"

"Is he an alien, or isn't he? Say what's the matter with you guys? I thought magazine editors were supposed to be bright."

"We're keeping an open mind," Jeff Morrison said finally.

"But you said you were convinced this guy was from—"

"From Carinae III," Krith said. "It's a star system of twelve planets approximately 103.754 light years from here."

The reporter allowed his gaze to travel from Krith's partially bald head to the seams of his Bermuda shorts and back gain. "Say," he said suddenly. "Don't I know you from someplace?"

Krith derricked himself up from the edge of the desk. "That's quite unlikely, Mr. McCarthy," he said aloofly. "Unless, of course, you've been to Carinae III."

The reporter scratched his head. "Did you say your name was . . . Krith?"

"That is correct," the man in the shorts said. "Of course you understand that your pronunciation is phonetic."

McCarthy's face snapped to alertness. "Yes," he said. "Yes of course. It is phonetic, isn't it? Only the last time I heard it, it was Chris—Chris Christianson they called you. And it wasn't in Carinae III either, it was in Kansas City, Missouri where you were arrested for elevating a papier-mache flying saucer over the city by means of two dozen carnival balloons!"

For just a moment the man in the shorts met the reporters stare. Then his shoulders sagged in an expression of complete and utter futility.

McCarthy jerked his chin at the retreating figure just as it disappeared through the door. "Old Chris is a crackpot," he announced. "Pulls stuff like this all over the country. Funny part of it is that there's always people who'll fall for it. Take you for instance—actually believing he was from someplace in outer space."

"Now wait a minute!" Hodges

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objected. "You're not going to *print* that, are you?"

"Why not? You said it, didn't you? I heard you say it."

"But you don't understand. Publicity like this. It'd break me. Anyhow I didn't really mean that I was taken in by him."

"You didn't?"

"No! In fact this whole stunt of inviting the aliens up here was just a stunt to build up circulation. We don't really believe in aliens, do we, Jeff?"

Jeff shook his head.

McCarthy allowed his eyes to travel over the space pictures that lined the wall. "Tell you what," he said. "I like science fiction, and because I like it, I don't feel I should turn in any story that might embarrass you and possibly hurt your business. . . . So suppose we forget the whole thing?"

Hodges didn't bother to conceal the sigh of relief that escaped his lips. "Thanks, Mr. McCarthy," he said. "And if there's anything I can ever do for you. . . . Say how about an autographed Kelly Freas painting before you go?"

The reporter smiled. "That won't be necessary," he said.

Hodges hacked up a laugh. "Aliens!" he said. "I wish I had one of those proton blasters so I could blast every one of them clean out of the gaalxy!"

"Yes," McCarthy said. "I can see how you feel. Now if you'll excuse me."

After the reporter had closed the door behind him, Hodges turned to his assistant.

"Nice guy," he said.

Jeff Morrison nodded. "Nice guy," he agreed.

"Where did he say he was from?" the editor asked.

"You mean where did he work?"

"That's right."

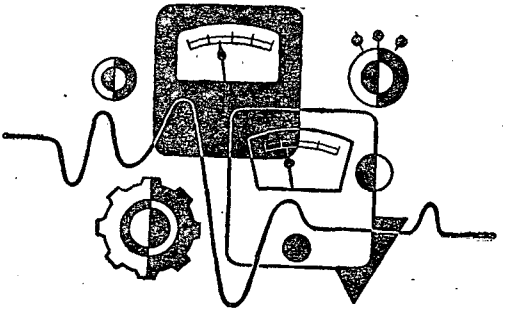
"He said he worked for Universal—that was it: Universal News Service."

"Who are they?" Hodges asked.

"I don't know," Jeff said. "I don't believe there is a *Universal* News Service. . . . Unless—"

Together they walked to the open window that commanded a view of the street.

But there was no one in sight.



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hands of steel

by . . . Dean McLaughlin

The magnet was gigantic. Its big, ugly shape loomed over him, looking very much like a fantastic nightmare insect.

THE bubble of talk stilled as the captain strode through the maze of round tables to his table on the dais. A steward held the chair for him, and he sat down. The ship's officers, who had been waiting, sat down. The stewards began serving.

Third Engineering Officer John Shaw felt the *Thunderbolt's* thrust slack abruptly. The salon was filled with the alarmed exclamations of the passengers.

The passengers at his table looked at him expectantly. "Mr. Shaw," Mrs. Appleby asked firmly. "What has happened?"

The same question was being asked at the other tables. Shaw made a helpless gesture. "I don't know," he admitted. He smiled reassuringly. "Nothing serious, I'm sure. It happens every now and then."

A steward, his face a careful blank, approached the table. He bent close to Shaw's ear.

"They need you in the Thrust Room," he said.

"What's happened?" Shaw asked quietly.

"They didn't say," the steward answered.

Shaw shrugged. They needed

Dean McLaughlin, author of the widely discussed article, HOW TO BE A SAUCER AUTHOR *(*FU*, Feb. 1957) returns with this unusual story of heroism and love in space. Mr. McLaughlin, not to be confused with his father, the distinguished astronomer, is becoming increasingly well known in the field.*

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him. That meant it was bad enough. Whatever it was, it was nothing trivial.

He glanced around the table—at the passengers watching him. Keeping his face plain, revealing no hint of foreboding, he folded his napkin and stood up.

"I'm sorry," he apologized. "You'll have to excuse me."

In the chair beside his, Althea Harwell twisted around. She looked beautiful in her evening dress. "It's something bad?" she asked, as if she could read his thoughts.

She'll find out what I am now, he thought tightly, but he kept his face calm.

"No," he said. "Just something that has to be tended to."

He threaded his way through the tables, feeling the eyes on his back. From the corner of his eye, he saw a steward talking to the captain.

The captain stood up. He tapped his water glass for silence. The alarmed murmuring stopped.

"I'm afraid our dinner will have to be delayed . . ." he began.

Shaw didn't hear the rest of it. He headed for the elevators. One was waiting for him.

He wondered what the trouble was. He thought about Althea.

She'll know what I am, now, he thought, a coldness draining into his blood.

The elevator dropped toward the bottom of the ship. *She'll know I'm the one who goes outside.*

It had started when he saw her slam her tennis racquet on the deck and stalk off the court in disgust.

He followed her. It was an impulse, and at the time he did not question the source of the impulse. He only wanted to speak to her, to restore her pride.

He caught up with her at the elevators. She was only as tall as his shoulder, and slim. Her blond hair was arranged in a way more becoming than fashionable. Her short, white tennis skirt left her legs bare, and her sleeveless blouse was cut to expose as much shoulder as possible.

He stopped close behind her. "I saw you on the courts," he said. "You shouldn't let it get you. I can tell you're a good player."

He knew it was the thing she most wanted to hear.

She turned, surprised by his voice. "Oh, hello," she said pleasantly. But her face wore a puzzled look.

"Your timing was off," Shaw explained. "A bad player wouldn't have that trouble."

She frowned, looking up at his dark tanned face and black brows. "I don't understand."

"We've been tapering thrust ever since we left Earth Terminal," he explained. "We'll be down to Mars normal when we get there, so you'll be adjusted to Mars gravity."

"What has that to do with the way I play tennis?" she wondered.

"Just this," Shaw told her. "Right now we're at nine-tenths Earth normal—not enough difference to no-

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tice, ordinarily. But you don't move quite the way you expect to. The ball doesn't fly the way it should. You trip over your own feet because you expect them to be on the deck a half second before they are. Naturally, you don't do very well."

"Oh," she said, comprehending. "I see."

She chuckled. "No wonder I had trouble."

An elevator arrived. The steward leaned out and looked at them. But Althea motioned him to go on. After a moment, the steward drew back. The doors closed.

"Thanks for explaining it," she said gratefully. "I feel a lot better now."

Eagerly she walked back onto the court. She picked up her racquet. She picked up a ball and served it against the practice board. She missed its rebound. She picked it up and tried again. And again.

Shaw watched her. She didn't give up this time. After a while she was hitting one out of four, and then one out of three.

Mark Kendrew, the *Thunderbolt's* thrust-power foreman, was in front of the instrument board, making notes on a clipboard.

"What's wrong?" Shaw asked.

Stolid, Kendrew marked a notation on his board. Then he turned. He gestured a thumb at the board.

"Number 37 magnet's slacked," he said.

Shaw looked up at the board. He'd have missed it if Kendrew hadn't told him what to look for. The only sign of trouble, now, was the spread between the power going into magnet 37 and the strength of its field.

All the other magnets were drawing reduced power, so that the composite magnetic field was still symmetrical. But the field was weaker, too, so Kendrew had had to reduce the *Thunderbolt's* thrust.

It was either that or melt the bottom off the ship.

Shaw studied the instruments critically. "What do you think?" he said. "Will it have to come out?"

It was a pointless question. There was only one thing to do with a bad magnet.

"It's your critter," Kendrew said.

Shaw unbuttoned his blouse and shrugged out of it. "Might as well get started," he said, already on his way.

Two of the thrust crew were waiting in the suiting room. They had his armor ready. The chassis squatted on the deck like a midget tank, waist high and stubby; the carapace, beside it, was a silvered dome the shape of a beehive.

Shaw inspected both pieces. They looked all right.

He shucked his pants and sat on the chassis' rear platform. He started to disconnect his legs.

Kendrew came in, clipboard under his arm. He made a point of not watching Shaw take his legs off.

"Replace magnet 37," he said, unnecessarily repeating the instructions. "Inspect for other damage.

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The fireball may have budded when the magnet slacked. I think the heat reflector's broached. There's sign of heating in that zone."

Shaw nodded, listening but intent on the job of removing his legs. "Will do," he said. He handed his left leg to one of the crewmen. It looked like a human leg, except that the shoe was a part of it, and the thigh end, inside the screw-on sleeve, was a mass of short wires joined in groups of twelve to pea-sized socket plugs.

Shaw started unscrewing his other leg. "Got the replacement ready?" he asked.

"On the sled," Kendrew said. "And a couple of reflector segments, too, in case you need them."

"Good enough," Shaw said. The leg came loose and he slipped his hand inside the cavity to disconnect the plugs. He pulled them apart one by one. The leg twitched slightly. Whole spectrums of sensation ceased to exist. He handed the leg to the crewman.

Hoisting himself on his hands, he lowered his body into the chassis' open well. The two crewmen helped him strap into the corset-like harness which would hold his legless body erect. It was not comfortable, but there was no way to make it comfortable.

Groping in the shadows inside the well, he found the nerve links. Working carefully to be sure he matched them right, he connected them to his stumps. He felt the hard, cool deckplate under his supple treads. He felt the ready strength of his engine.

He tested the chassis, feeling the familiar stickiness as his electromagnetic treads clattered on the deck. He walked forward, then backed, turned right and then left, slow and fast. The machinery responded with perfect, oiled precision. It felt entirely right.

Kendrew came forward and handed him a cup containing a particularly evil-looking green-gray soup. Shaw held the cup in both hands, gathering the stomach to drink it. He felt ridiculously like an old Teutonic knight in a Wagner opera.

"Bottoms up," Kendrew said. Shaw lifted the cup and drank. It tasted like old rubber and dead fish.

He made a face. "Water," he said, holding out the cup.

"You can't have much," Kendrew told him. He gave the cup to a crewman and nodded.

"Just enough to get this taste out of my mouth," Shaw said. "Can't they put some other flavor in it?"

The crewman came back with the cup, rinsed out and half full. Shaw took it gratefully.

"Can you think of a flavor that would cover a taste like that?" Kendrew asked reasonably. "You either drink it as is, or take your chances with the gamma."

Shaw rinsed out his mouth and swallowed. He gave the cup back and spread his arms wide. "All right, boys," he said. "Take 'em."

The crewmen moved in. They

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unscrewed his arms and disconnected the nerves. They put the arms aside and connected his stumps to the armor's arm circuits.

He tested the extensible, spider-like arms that sprouted from the front deck of his chassis. They had all the limber, controlled feel of real arms. He checked the rack of selectable tool-hands; they socketed perfectly, all of them. They worked smoothly.

"What's the schedule?" Shaw asked.

"We go inert in—" Kendrew looked at his watch "—four minutes. That is, if you're ready."

"I'm ready," Shaw said. He lifted his carapace with grapple hands and set it down over himself. He changed to wrench hands and bolted the dome into place. He had to work by feel because the periscope plate could not adjust to that angle of vision.

"Can you hear me?" he asked.

Kendrew had retreated across the room to the phone. "Coming through fine," he acknowledged. "And me?"

"I hear you," Shaw said. "How much time have we got?"

Kendrew checked his watch again. "A couple of minutes. Ready?"

"I will be."

He increased the pressure inside his armor to three atmospheres. The armor held it without strain or leaking. He let the pressure bleed out.

Pivoting, one tread braked, he trundled across the deck to the valve chamber. A crewman stood by to help, but Shaw motioned him aside and opened the door himself. Inside, still walking forward, he reached back and sealed the door tight.

The replacement magnet sat on the sled as if squashing it. It was gigantic. Its big, ugly shape loomed over Shaw, dwarfing him. The two heat reflector segments flanked the mass like curved, silver wings. It looked like a nightmare insect.

Shaw hitched the sled to his armor with a length of cable. He opened the valve that drained air from the chamber.

Then he waited. Waited for the *Thunderbolt* to go inert, so he could go outside.

This was what he rode the ship for. This was what he was paid to do.

He thought of Althea. It was dead thoughts. She would know he was a prosth. He could not keep her from knowing.

She would detest him—detest him for the thing he was, and because he had not let her know.

But mostly for the thing he was.

Half man.

Half steel.

He had known that nothing would come of it. He wasn't sure he wanted anything to come of it.

When the *Thunderbolt* reached Mars, she would leave the ship, and he, in the *Thunderbolt*, would go back on the long trajectory to Earth.

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That would be the end of it. He would not see her again.

But, while it lasted, he wanted it to be good and fine.

Without wondering too deeply into motives, he wanted her to like him. He wanted her to find the same delight in his company as he found in hers, and he liked to believe that she did.

He did not tell her that his limbs were false—that they were cleverly designed machines. He was ashamed of them, and he knew from bitter experience how some people reacted to the knowledge. He did not want to see revulsion on her face.

But, above all, he did not tell her because, to her, he wanted to be an ordinary man.

He never completely escaped the knowledge, though, that he was not an ordinary man. It cast a shadow over everything.

She said, "Can you get someone moved from our table?"

The question came unexpectedly. They were in the ship's lounge, off by themselves in an enclave of divans, chairs, and potted palms, under the transparent dome that displayed the infinite stars.

"I might be able to arrange it," he said cautiously. It was the wrong thing to say, and he knew it.

He was an officer only because of the company's policy, which made the ship's prosth an officer—partly to make the job more attractive, partly to justify his high pay.

But the company expected things of its officers—even the prosth. Especially in a passenger ship. For one thing, it expected the officers to be impartial to their passengers. He could not—and he knew it—snub a man to please a girl.

Still, there were ways it could be done.

"Someone you don't like?" he hazarded.

She nodded. "Peter Royce."

Peter Royce was a young man—younger than Shaw. Shaw had thought he was likeable enough, though withdrawn. He wondered why she didn't like him.

"Has he annoyed you?" He couldn't really imagine it.

"No," she admitted honestly. "It's just that . . . well, he's a prosth."

The distaste in her voice put a coldness in Shaw's blood. He forced himself not to show it.

"How can you tell?" he wondered. A prosth limb was hard to spot, even when you knew what to look for.

"His elbow needs oil," she said fastidiously. "It squeaks."

She wasn't just attacking Royce. She was attacking him, too, though she didn't know it.

"It's not his fault he's a prosth," Shaw defended.

"Please understand me, John," she said soberly. "It isn't what I know I should think—I know it isn't right. But I can't help it. It's how I feel."

His hand clamped on her arm. "You *can* help it," he insisted, be-

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cause it was what he wanted to believe.

Her face turned white with pain and sudden terror. Her whole body froze. Weakly, she tried to twist out of his grip.

He had forgotten his hand had twice a man's strength. He let go. Her arm was white where his hand had been.

"Sorry," he said.

She rubbed her arm, remote from him. A wall had been created between them.

"What's the trouble about a prosth?" he demanded.

"Nothing," she admitted. "I . . . they scare me."

In the seething silence that followed, she spoke again. Her voice was strained. "Remember the Captain's Ball? He . . . I danced with him. He had that . . . that *arm* around me. Just thinking about it . . . it's *ugly*!"

"You didn't know about his arm then," Shaw inferred.

"Of course not," she said stiffly.

"Then what difference does it make?" he argued.

"Please!—don't make me be logical!" she pleaded distressfully. "I tell you—I can't help it!"

"It doesn't make any difference what a man's arm is made of," Shaw argued calmly. "Whether it's flesh and bone or steel and plastic. It's that man's arm. He uses it the same as any man—it feels things the same way—and that's how he thinks of it. It's just his arm."

"You seem to know an awful lot about prosths," she resisted coldly.

"There's one aboard this ship," Shaw said, forgetting caution. "Prosth in all four limbs. And if someone has to go outside to make repairs, you'd better be mighty glad he's aboard. Because he's the man who'll have to do it."

"Don't think I don't appreciate it," she said honestly. "But do I have to *like* them?"

"You have to think of them as ordinary men," Shaw said reasonably. "That's what they are."

"Why does it have to be a prosth that goes outside?" she asked irrelevantly.

"Because nobody's ever been able to design body armor that will give enough protection from radiation," Shaw told her. "With a prosth, the armor is a part of him. He can carry all the weight he needs."

"He's not a man—he's a machine!" she said abruptly.

Shaw shook his head. "It's a machine with a man controlling it," he said. "Just like any other machine. It's like a man driving a tractor, but he's got a lot better control than any man ever had on a tractor."

"Now you're making it sound like prosths are better," she said doubtfully.

Shaw made an offhanded gesture. "They have advantages," he admitted. "A prosth limb is stronger, usually, and more sensitive. And they don't get tired. They can do a few things an ordinary limb can't do—and they can be changed for

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limbs designed for special jobs—like this armor I was telling you about. But that doesn't make a prosth any better or any worse than anyone else. Just because someone can beat you at tennis—does that make him any better as a person?"

She shrugged, admitting his argument. "I'd still feel easier if you'd get Peter Royce moved away from our table," she said.

"That's the thing I don't like," Shaw said bluntly. "You liked him until you found out about his arm."

"Are you my censor?" she demanded airily. "Besides, who said I liked him?"

"You danced with him," Shaw pointed out.

"That doesn't mean anything," she told him calmly. "I danced with you, too."

Shaw kept his face blank, concealing the shock. Maybe she saw it anyway, or maybe she only saw what she wanted to see. But her voice turned gentle and her eyes turned kind.

"I shouldn't have said that," she admitted. "I don't mean it."

She met his eyes steadily. "I know you're right—I shouldn't hate them just because they're prosths. It's just that . . . John, I can't always control how I feel."

She searched his eyes. "Is that bad?" she pleaded. "Is it evil?"

Sealed in his armor like the flesh of a crab, Shaw stood on the cold deck of the valve chamber, his long, lean arms folded back and resting on the superstructure of his chassis. He waited.

When the *Thunderbolt's* thrust stopped, the passengers would be alarmed unless they were told it was done so a man could go outside. And Althea would know he was the man, because he was the one who was called away from his table—not the first engineer or the second engineer, but himself, John Shaw, the third.

She would know he was a prosth.

She probably knows already, he thought spiritlessly.

The *Thunderbolt's* thrust slacked by degrees. Then, with a release like the twang of a bowstring, the ship went inert. Kendrew's voice spoke to him. "All secure. You can go out now."

"On my way," Shaw said.

He opened the outer seal. The great, massive door swung inward. A patch of black night and sharp stars showed through the opening.

Locking grapple hands on either side of the doorway, Shaw adjusted his treads to maximum magnet and traction. He strained forward, using arms and treads both against the dead inertia of the loaded sled. It resisted. Then, very slowly, it came.

Cutting his magnets, he let himself drift. Very gradually, he floated through the doorway. Blindly, by feel, he scrabbled for the anchor grommets on the hull.

He found them, locked on to them, and—taking advantage of the play in his hitch to the sled—he bolted his chassis securely to

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them. He did it by feel, while he watched the sled and its load slowly emerge from the portal. He locked his hands on it, restraining it. The hitch pulled taut. His steel arms and his anchor bolts groaned at the strain. But the sled stopped.

Gently, he eased the sled against the hull. He switched on its magnet. It stuck.

He unbolted and set off toward the bottom of the ship.

"Outside," he reported to Kendrew. "On my way."

The sun was on the other side of the ship. The stars did not break the darkness. Even his headlamps at full power only poorly showed him the way on the ship's smooth flank. He crawled; the ominous mass behind him forbade any greater speed.

Several yards back from the hull's end, he stopped and let the sled skid to a halt. Unhitching from it, he went on and paused on the lip overlooking the broad, deep dish which cradled—when the ship was on thrust—the thermonuclear blast.

"At the bottom," he told Kendrew.

"How does it look?" Kendrew asked.

Shaw played his headlights down into the bowl. The parabolic heat reflector had a gaping, black-rimmed hole in it, and the metal surrounding the hole was shriveled like crushed foil.

"Fair," Shaw said. "The heat reflector's broached."

"Have you got enough segments to patch it?" Kendrew asked. "What about under it?"

Shaw inspected the damaged reflector. "I can patch it all right," he decided. "I don't know about under it. I can't see from here."

He detached the gripper on his left arm and replaced it with a cutting torch. Reaching out, extending his arms to three times their usual length, he cut the damaged sections out of the frame.

As the four-ply metal came loose, Shaw rolled it into a tight, crushed bundle. When he had it all, leaving only the spiderweb frame, he took the bundle back to the sled and anchored it there.

Now he unloaded the big magnet. Anchoring himself to the hull at the rim of the firepit, he reached behind him with both hands and lifted the magnet. It took all the power in his arms, and still it came slowly.

He brought it up over his head. He let it drift forward. Then, restraining it, he let it swing down into the pit. He slowed it—maneuvered it through the gap in the reflector and into the dark cavity beyond. There he stopped it, nestled close to magnet 37.

He went down himself, into the darkness where even the starlight did not come. "I'm down under, now," Shaw reported. He shone his lights around. The bulky, ugly shapes of the magnets crowded in symmetrical ranks filled the dark place with shadows and giants of silhouette fittings and steel.

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The magnets had no power going into them, but they nudged and tugged at him as he moved, like living things with paws.

"Everything looks all right," he reported.

"What about number 37?" Kendrew asked.

It took a moment to identify the magnet—number seven in ring three. He inspected it all around, drifting hand over hand above it. He peered into every recess and corner he could see.

"It looks all right," he said finally. "The trouble must be somewhere inside."

"Well, take it out," Kendrew said.

Shaw set his chassis on the butthead of magnet 37 and raised his tread magnets to full power. He tested their hold against the strength of his arms. Then, satisfied, he reached both hands into the space under the defective magnet. He found the power cables. He traced them to their terminals.

He clamped a grip-hand around one of the cables, close to its terminal. He closed a wrench-hand on the terminal's bolt.

Instantly, his arm whipped and lashed in shattering spasms. He couldn't control it. It felt as if it was smashed to atoms.

Then there was nothing, nothing at all. The acrid smell of burned wires filled his armor.

He must have yelled, because Kendrew's voice said abruptly, "Jack! What's wrong?"

Shaw looked down at his arm. It was battered, and he couldn't feel anything in it. He tried to use it, and it didn't move. His stump had a sore, singed feel.

"That cable's live," he exclaimed.

"That's impossible," Kendrew protested.

"There's power in it," Shaw insisted. "It just burned out my right arm."

There was a moment's silence. "Can you use it at all?"

"No," Shaw said. "It's dead. Completely."

"Don't try to do anything," Kendrew directed. "Don't even move. I'll check things here."

Shaw waited, not moving. It wasn't hard. His mechanical exoskeleton could hold a position as long as he wanted.

Kendrew came back. "Nothing wrong at this end," he said. "Must have been a static charge in the coils. Should be safe now—now that you've grounded it. Are you all right?"

"I'll pass," Shaw said.

"You'd better come in and get a new arm," Kendrew suggested anxiously.

"It's no good," Shaw told him. "My nerve links are blown. It'll take surgery to put me back in commission."

There was the sound of thoughtful breathing from Kendrew. "Can you finish the job with just one arm?"

"I'll have to," Shaw said.

"We've got the tank," Kendrew

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reminded. "We can use it if we have to."

"You think you can do it?" Shaw asked. "You want to glow in the dark?"

"Well, no," Kendrew admitted.

"Then shut up," Shaw told him. "This is my job."

He felt along his ruined arm. The metal was buckled and soft. The hand was welded to the terminal.

Withdrawing his good hand, he put the cutting torch in the wrist socket and fixed a television eye to the forearm. He didn't like using the eye—it was always disorienting and the picture was never quite sharp, but for this job it was the only way he could see what he was doing.

He burned the fused wrench away from the terminal. He managed not to damage the threading. He folded the limp arm back on itself and clamped it to his chassis.

Then he went on with the job.

He stripped the cables from their terminals. He unscrewed the massive, spring-resisted bolts that locked the magnet immovably on its mount. He wedged his arm between the magnet and its mount and pried it free. It was like pulling a tooth.

Now he took hold of the new magnet and moved it into position over the mount. The magnet had to be set down exactly right, so its field would blend smoothly with the fields of the magnets around it. The terrible mass was hard to handle with only one hand.

He worked at a snail's slow, careful pace. He eased it down against the mount so gently it did not bump. But it wasn't set right. He raised it and tried again. And again.

Then, somehow, he managed to hold down the almost incompressable springs while he screwed the bolts down on them, one by one, row after row, in the darkness with only his headlights to see by.

At last it was done. He inspected the job with the television eye. Everything was perfect.

He felt good. He had done it.

"It's done," he told Kendrew. "You can test any time."

"Are you clear?" Kendrew asked.

"Not yet," Shaw answered.

"Well, get clear," Kendrew ordered. "Ever see what one of those magnets can do to a suit of armor?"

"No," Shaw admitted. "And I don't want to see, either."

He knew very well the force of the magnet could squash him flat.

"Let me know when you're clear," Kendrew said.

Shaw did not reply. He was too busy juggling the old magnet through the hole in the reflector. He watched its ugly shape glide slowly and ominously between the naked ribs of the mirror's frame, touching nothing. He gauged its shift and movement in the changing tensions in his arm. He nudged it and urged it away from the ribs it threatened.

And he got it outside.

He released his tread-magnets then and pulled himself after it.

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Like an acrobat, he swung himself out around it and, extending his arm three lengths, he set his chassis on the rim of the *Thunderbolt's* hull.

He started the magnet toward him, then released it. He bolted his chassis to the hull.

He watched the magnet drift toward him. He let it come, then took hold of it again, guided it past him, and set it on the sled as gently as an egg.

He dragged the sled back from the rim. Out of range of the magnets, he stopped.

"I'm clear," he told Kendrew.

"Don't move till I tell you," Kendrew ordered.

Shaw stayed where he was.

He remembered Althea now. He had not thought of her all the time he was working, because it was one of those jobs where a man did his work and did not think of anything else.

But now he thought of her.

He wished he could convince her that a man—the essential part of him—was a consciousness; that the flesh that contained him was no more intrinsic to it than the armor which contained him like the shell of a clam.

It didn't matter, he wanted to tell her, what the body was made of. The important thing was the man inside.

But he knew it was hopless.

He would have to avoid her, he told himself bleakly. He did not want to see the revulsion on her face, or hear her voice condemn him for having let her think he was an ordinary man.

No. He changed his mind.

He would *not* avoid her. He would not seek her out, but he would not avoid her. A man had to face the thing he made of his life. He could not run away.

He waited. Finally, Kendrew's voice came again. "It's safe now," he said. "It works fine. Good job."

Shaw turned and went back to patch the heat reflector.

As soon as he was back in the valve chamber, the *Thunderbolt* resumed thrust. He had weight again. He let air into the chamber. He clattered across the deck to the inner door.

In the suiting room, they swarmed over him. They hoisted his carapace off his chassis with a power winch. They crowded around him, disconnecting his arms and legs.

"How are you, Jack?" Kendrew asked soberly.

"All right," Shaw shrugged. He grinned. "It's my arm that needs fixing."

He nodded at the crippled arm, folded, clamped to the chassis.

The men lifted him out and laid him on a wheeled stretcher. "Where's my legs?" he demanded. "I can walk. I want my legs."

"The docs want a look at you," Kendrew said.

She came to the clinic.

They were keeping him there

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while his new nerve receptors mended with the flesh. He was wearing his legs and the other arm, but his mending stump ended in a tangle of wires.

He was lying on the cot when she came in, unexpected and unannounced.

"Hello," she said. She sounded warmly eager to see him. She tried a tentative smile.

He looked at her. He hadn't imagined she'd come. And the look on her face was wrong.

She found a stool and brought it over. She sat down near his cot. "Are you all right?"

He couldn't answer. He tried to understand why she was here.

"Can't you talk?" she wondered. She sounded really afraid.

"I'm all right," he said. He pushed himself up—bunched the pillow under his shoulders. "I'll be out of here in a day or two. As soon as they let me."

"They tell me you'll be staying on Mars," she said.

He nodded. "Sick leave," he said. An easiness, a calmness flowed into him. He dared to hope. Was it possible? he wondered. Was it possible?

"John," she breathed tensely, "don't make me be logical."

She stared at his arm. Only the hand showed; the rest was hidden by his pajama sleeve. It seemed to fascinate her.

"Where . . . where does it join?" she asked uncomfortably.

"You want to see?"

Her chin came up. "Yes."

He started to work the sleeve up his arm. Boldly, she reached out and stripped the sleeve up all the way to the shoulder. The arm looked like flesh above and below the joint. The screw-on sleeve looked like a metal band around his arm.

"Why, it looks just like an ordinary arm," she exclaimed.

He nodded. "That's all it is," he said simply.

"It doesn't look like a machine at all," she marveled, trancelike. "How . . . how did it happen?"

"Copter smash," he said emotionlessly. "I'd rather not talk about it."

"All right."

She stared at his impossibly lifelike arm. She reached out and ran her fingertip along his forearm. "Can you feel that?"

He nodded. "Yes."

She lifted his hand and touched it to her cheek. "And this? Can you feel this?"

Her cheek was warm and velvet. "Yes," he said. He brushed his fingertips across her cheek. He passed his fingers through her waved blond hair, then touched her chin, turning her head to meet his eyes, then started to withdraw.

Compulsively, she caught his hand. She clasped it in her lap between her own two hands. It was warm.

"That's all I wanted to know," she breathed. "It's *you*."

There was a gladness in her eyes.

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